PUBLISHED BY AUTHORITY OF THE ASSOCIATION

The Manitoba Horticultural and Forestry Association

REPORT OF THE
FOURTEENTH ANNUAL CONVENTION
HELD FEBRUARY 16-17, 1911

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Manitoba Horticultural
and Forestry Association

REPORT

of the

Fourteenth Annual Convention

held February 16 and 17

1911

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1912

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FOURTEENTH ANNUAL CONVENTION

Held February 16 and 17, 1911

The Fourteenth Annual Convention of the Manitoba Hortieultural and Forestry Association was held in the Auditorium of the Agrieultural College on February 16th and 17th, 1911.

A new departure was inaugurated this year in the form of a Womans' Meeting, which was held on Thursday afternoon. This departure apparently met with general favor, as the meeting was well attended and aroused an enthusiastic interest.

The regular meetings of the Assoeiation were also held in the auditorium of the College and were well attended throughout. These meetings were presided over by the President, Dr. H. M. Speechly, of Pilot Mound, Man. The Convention was favored with a visit from Mr. Abraham Knechtel, Chief Inspector of Forest Reserves, Ottawa, who delivered two very entertaining and exhaustive illustrative addresses on the "Forests of Canada" and the "Forests of Europe." Other good papers and addresses were given on fruit growing, gardening and forestry whieh were listened to with genuine interest. These papers and addresses are embodied in this report.

SECRETARY-TREASURER'S REPORT.

Sir,—As seeretary-treasurer of the Manitoba Horticultural and Forestry Assoeiation, I beg to submit herewith a report of the work of the Association for the year 1910.

During the regular session of the Provineial Government in February of this year the Aet of incorporation was amended and the name of the Soeiety was changed from the Western Hortieultural Society to the Manitoba Horticultural and Forestry Association. The Aet was also amended to give the assoeiation powers to affiliate with local hortieultural soeieties, and thereby increase its usefulness throughout the Provinee.

The Association has made very satisfactory progress throughout the year and is now in good condition for doing effective work.

The list of hardy trees, shrubs and perennial plants was again revised at the annual meeting, and the list included in the annual report of the Association.

The Asssociation this year, as in previous years, offered a list of premiums from which each member was allowed to make one selection. The following list of premiums was offered:—

[a] Four seedling apple trees grown from Manitoba seed;
[b] Four seedling plum trees grown from Manitoba seed;
[c] Four plants, any of the following varieties of currants, White Grape, North Star and Red Dutch;

[d] Three raspberry plants;
[e] Six Morella strawberry plants;
[f] Eight Cuttings of any of the following willows: Russian laurel, French laurel, Russian golden;

[g] Six Russian poplar cuttings;
[h] One of the following climbers: Virginia creeper, Celastrus Scadens;
[i] One Aguilegia or columbine;
[j] One Delphenium or larkspur;
[k] One Hesperis or sweet rocket;
[l] One Tiger lily.

A large percentage of the members of the Association availed themselves of the opportunity of securing some one of the premiums offered, showing that this phase of the Association's work is being much appreciated by the members.

The financial statement of the association is as follows :

RECEIPTS.

Balance on hand from 1909	$149 78
Membership fees	127 50
Cash returned	6 00
Annual Government grant	200 00
	$483 28

DISBURSEMENTS.

Postage	$39 00
Printing	21 75
Expenses Minnesota delegate	32 10
To printing and addressing envelopes, etc	72 00
Plant premium	31 70
Telephoning, telegraphing, draying, etc	8 50
Balance on hand	278 23
	$483 28

The correspondence of the Association is increasing yearly, inquiries being received relative to all phases of horticultural work. This increased correspondence, together with the demand that is made for the Association's reports, indicates the growing interest in the subject in all parts of the West. These annual reports, which are on hand for several years back, contain much valuable information on Western horticulture, and are undoubtedly a means of stimulating a greater interest in the subject. The publication of the annual report is probably one of the most valuable lines of work undertaken by the Association.

The membership of the Association for the year has been quite satisfactory, corresponding most favorably with the membership of previous years; the total membership for the year is 131.

On behalf of the Association I beg to thank the Provincial Government for the assistance rendered during the year. The annual departmental grant of $200, together with a special grant of $500, have been received and applied towards the finances of the Association. These grants have assisted very much in carrying out the various lines of work undertaken by the Association.

A general good feeling has existed among the members of the Association throughout the year, and from all quarters assurances have been received that an increasing interest is being taken in the work of the Association.

All of which is respectfully submitted.

F. W. BRODRICK,

Secretary-Treasurer.

RESOLUTIONS PASSED

1. Resolved that we express to the Minnesota Horticultural Society, and through that medium to the family and friends of the late Prof. S. B. Green, our sorrow at his untimely decease, and that we offer our sincere condolence and express our appreciation of his invaluable service to the horticulture of the American Northwest.

2. Resolved that we express to the Canadian Forestry Association our pleasure at learning that the next Dominion Forestry Convention is to be held in Winnipeg, and express our willingness to co-operate in any way possible.

3. Resolved that this Association express its appreciation of the value of the work of the forestry nursery station at Indian Head; futher, that, as the keen demand for free trees is necessitating the rapid reduction of the number of trees furnished to each applicant, we respectfully suggest to the Department of the Interior that the nursery station work of the Canadian West be considerably enlarged.

4. Resolved that this Association keenly deplores the comparative absence of adornment of the rural school grounds of Western Canada, and that we suggest to the Department of Education that a grant or other suitable encouragement be provided to encourage rural school boards to take up this work.

5. Whereas a large amount of unsuitable nursery stock is annually imported into Western Canada, involving a heavy loss of money and energy upon those who purchase such stock, therefore be it resolved that we suggest to the Provincial Government the desirability of allowing nursery stock to be sold only by licensed practical salesmen, in order that the guarantees given by such salesmen shall be more under check than at present.

6. Resolved that we express our thanks to the Manitoba Agricultural College for their hospitality in connection with this convention.

7. Resolved that we express to the Forestry Branch of the Federal Department of the Interior and to the Minister our thanks for the kindness shown in allowing Mr. Knechtel to be present with us to deliver his splendid illustrated addresses.

8. Resolved that we express our thanks to the chairman.

9. Resolved that we express our thanks to those contributing to the programme.

10. Resolved that we express our thanks to the press.

11. Resolved that we express our thanks to Secretary Brodrick.

12. Resolved that we express our thanks to the matron of the college.

List of Trees, Shrubs, Perennials, Fruits, Etc.,

Approved by the Manitoba Horticultural and Forestry Association.

The following list of trees, shrubs, fruits, etc., was adopted as being desirable for planting in Manitoba, Saskatchewan and Alberta. The list could be extended considerably, but it is thought advisable to confine it to the hardiest varieties.

A very great deal of emphasis was placed upon the advantage of procuring home-grown trees, where at all possible. Some of the varieties given in the list, while perfectly hardy when grown from seed procured in the Canadian West, are not to be depended upon when grown from seed procured in the South or East.

Trees suitable for forest plantation and Windbreaks.

Manitoba maple, box elder or ash-leaved (Acer negundo).

Soft maple (Acer Saccharinum), for Southeastern Manitoba only, and only northern-grown stock recommended.

Birch, native variety, paper or canoe birch (Betula papyrifera.)

Green ash, native variety (Franxinus lanceolata).

Balsam poplar or Balm of Gilead (Populus Balsamifera).

Russian poplar, several varieties.

Cottonwood (Populus deltoides)—Hardy, especially adapted to deep, moist soils, but subject to rust in some localities.

Willows—White willow (Salix alba). Sharp-leaved willow (Salix daphnoides or salix acutifolia), Voronesh or golden willow (Salix voronesh). Russian laurel leaf willow (Salix pentandra), The French laurel leaf willow is also recommended.

Basswood (native grown stock only), (Tilia American) — Recommended for Red river Valley, with Brandon for the western limit; adapted to deep moist soils.

Elm—Native form (Ulmus American).

Oak—Mossy Cup or Burr Oak (Quercus macrocarpa). Southern Manitoba.

Carolina Poplar (a form of cottonwood) has not generally proved hardy.

Evergreens and Conifers.

Balsam fir (Abies balsamea), adapted for Manitoba and Eastern Saskatchewan.

Pines—Labrador, Gray of Jack Pine (Pinus divaracata), native, and (Pinus murrayana). Scotch Pine (Pinus Sylvestris). Riga pine)Pinus Sylvestris Rigænsis), a variety introduced from the forests near Riga, Russia, and found to be a somewhat hardier form of the Scotch pine. Swiss Stone pine (Pinus cembra), a hardy form introduced from the mountain regions of Central Europe, the above being a Swiss variety.

Spruce—White spruce (Picea Canadensis). Black spruce (Picea mariana), Colorado or Rocky Mountain blue spruce (Picea Pungens).

White cedar or arbor vitæ (Thuja occidentialis).

Larch or tamarack (Larix laricina). European Larch (Larix decidua). Siberian Larch.

Several of the trees in the above list are suitable also for ornamental purposes, especially tha laurel and golden willows, and all the conifers. The tamarack, though a conifer, is a deciduous tree. Grown where it is not crowded, it makes a handsome tree, its soft, silky foliage giving it a very ornamental appearance. The Manitoba maple and (where it will thrive) the basswood are also useful for street trees. The poplars are useful mainly on account of their great hardiness and rapid growth. In other respects they are not, as a class, desirable trees to plant very extensively.

In planting trees regard should be had to the nature of the soil. Ash, elm, cottonwood, willows and tamaarck will grow on moist land. Tamarack is particularly valuable for this class of land. The Russian poplars, white spruce, and pine will thrive on sandy or gravelly soil.

Ornamental trees and shrubs.

Asiatic maple (Acer tartaricum Ginnala). Also known as the Ginnalian maple, a beautiful shrub, valued for the beautiful tints of its foliage and seeds.

Alder—Common or European alder (Alnus Glutinosa).

Northwestern June Berry—Commonly known as Saskatoon (Amelanchier alnifolia).

Artemisia—Old man or southernwood (Artemisia abrotanum). Russian artemisia (Artemisia abrotanum tobolskianum).

Barberries—Thunberg's barberry (Berbers thunbergii). Purple-leaved barberry (Berberis vulgaris purpurea). Common barberry (Berberis vulgaris). Amur barberry (Berberis Amurensis).

Birches—Cut-leaved birch (Betula alba laciniata pendula). Low or dwarf black birch (Betula pumila).

Buffalo berry (Shepherdia Argentea), native.

Caraganas—Also called Siberian pea-tree. Practically all varieties of caraganas that have been introduced into the Canadian Northwest have proved perfectly hardy.

Cornus or Dogwood, Red Osier Dogwood, native (Cornus stolonifera), Siberian Dogwood (Cornus alba Siberia). Variegated Siberian Dogwood, for favored locations only (Cornus alba Siberica variegata.)

Cotoneaster—The sharp-leaved variety (Contoneaster acutifolia), common variety (Cotoneaster integerima), also the (Cotoneaster tomentosa), are all hardy.

Hawthorns—Scarlet thorn or Haw (Cratægus coccinea). Siberian thorn (Cratægus oxyacantha Siberica).

Broom—(Cytisus quercifolia).

Russian Olive—Oilberry (Elæagnus augustifolia). For Eastern Manitoba.

Native Silver Berry or Wolf Willow (Elæagnus argentea.)

Honeysuckles—Albert Regel's (Lonicera Spinosa, var. Albertii). Also all varieties of the Tartarian honeysuckle (bush forms).

Black or Canada plum—(Prunus nigra), native.

Sand or dwarf cherry—(Prunus pumila), native.

Wild Red, Pin or Pigeon cherry—(Prunus Pennsylvania).

Choke Cherry—(Prunus Virginiana), native.

Siberian or berried crab—(Pyrus baccata).

Japanese Quince—Half Hardy.

American mountain ash, dogberry (Sorbus Americana), native in Eastern and Northern Manitoba.

Missoura, Flowering, Golden or Buffalo currant—(Ribes aureum).

Buckthorns—Common Buckthorn (Rhamnus carthartica). Alder leaved buckthorn (Rhamnus alnifolia). Siberian buckthorn (Rhamnus dahurica).

Sumach—Smooth Sumach (Rhus glabra), native.

Rose—Japanese Rose (Rosa Rugosa). Several forms of the June or early flowering roses, including the yellow rose.

Spiräas—(Spiræa, Billardi), (Spiræa Arguta), Van Houette's spiræa, (Spiræa Van Houttei); white-flowered, meadow sweet, native (Spiræa salicifolia-; Sorbus-leaved spiræa (Spiræa sorbifolia): golden spitæa (Spiræa opufolia aurea);

Snowberry or wolfberry—Native varieties. (Symphoricarpus occidentalis and Symphoricarpus orbiculatus).

Lilac (Syringa)—All varieties on their own roots, or on stock of the common lilac (Syringa vulgaris). As many as thirty varieties of both double and single lilacs have been tested at the Brandon and Indian Head experimental farms, nearly all of which have been found hardy. By judicious selection, one may have a succession of blooms for four or five weeks.

Viburnum (Viburnum lantana). (Viburnum opolus), high bush cranberry.

Evergreen shrubs.

Junipers—Common savin (Juniperus Sabina). (Juniperus sabina variegata.)

Pine—Dwarf mountain pine (Pinus Montana mughus).

Vines and Creepers.

Virginia creeper (Ampelopsis quinquefolia), native variety.

Climbing Bitter Sweet—(Celastrus scandens), native.

Grape—(Vitus vulpina)—Frost grape, native.

Russian Honeysuckles—Climbing varieties, introduced from Siberia.

Hardy Perennials.

Aconitum or Monkshood.

Spiræa—(Spiræa, Filipendula), (Spiräa Ulmaria Alba), (Spiræa Pubescens).

Phlox—Many varieties.

Poppy—Icelandic poppy (Papaver nudicaule). Oriental poppy (Papaver orientale). Alpine poppy (Papaver alpinum). Royal scarlet.

Columbine—(Aquilegia), in varieties.

Dictamnus or Gas Plant—(Dictamnus fraxinella).

Bell Flower or Harebell—(Campanula).

Achillea or Yarrow—In variety.

Chinese Bell Flower—(Platycodon).

Coreopsis or Tickseed (Coreopsis delphinifolia).

Lychnis—Maltese Cross or Jerusalem Cross (Lychnis chalcedonica), (Lychnis Haageana).

Pink—(Dianthus). Sweet William (Dianthus barbatus).

Forget-me-not—(Myosotis).

Delphinium or Larkspur—(Delphinium grandflorum), (Delphinium formosum).

Pansies—All sorts.

Rock Cress—(Arabis Alpina).

Bleeding Heart—(Dicentra Spectabilis). (Dicentra eximia).

Foxglove—(Digitalis).

New England Aster—(Aster Novæ-Angeliæ).

Centaurea or Centaury—(Centaurea macrocephala). Mountain Bluet (Centaurea Montana).

Cone Flower—(Rudbeckia).

Blandet Flower—(Gaillardia).

Doronicum or Leopard's Bane—(Doronicum Caucasicum).

Shasta Daisy.

Cinquefoil or Five Finger—(Potentilla).

Pyrethrum—(Pyrethrum Roseum), (Pyrethrum Uliginosium).

Iris—In variety.

Yellow Day Lillies—(Hemerocallis Grandiflora), Orange Lily (Hemerocallis fulva), Lemon Lily (Hemerocallis flava).

Lily—Tiger Lily (Lilium Tigrinum.)

Lily of the Valley—(Convallaria majalis).

Peony—(Pæonia). All kinds.

Hardy Fruits.

Strawberries—Bederwood, Senator Dunlap, Clyde, Lovett, Enchance.

Raspberries, Red—Turner, Loudon, King, Shipper's Bride, Minnetonka.

Raspberries, Black—Older.

Raspberries, Purple and Golden—Caroline.

Currants, Red—Raby Castle, Stewart's, London Market, Red Dutch.

Currants, Black—Black Naples, Lee's Prolific.

Currants, White—White Grape, White Dutch.

Gooseberries—Houghton, Smith's Improved, Downing.

Grape—Beta, for Southeastern Manitoba.

Plums—Cheney, Aitkin.

Cherry—Compass cherry, for Southeastern Manitoba.

Crab Apples and Hybrids—Transcendent, Hyslop, Virginia.

Whitney No. 20.—Virginia, Early Strawberry—second degree of hardiness.

Standard apples for testing—Hibernal, Duchess, Patten's Greening, Charlamoff, Anisette, Blush Colville.

The following native fruits are recommended for trial: Juneberry (dwarf), sand cherry, buffalo berry, high-bush cranberry, all of which have been referred to above.

Papers and Addresses

TREE PLANTING.

By Miss A. Ferguson Playfair.

Thursday Afternoon, February 14th.

Miss Lilian Beynon, B.A., in the Chair.

That a person who knows less than, possibly any one else present, on the topic under consideration should be the one chosen to give a paper on tree planting, before an assembly meeting in the interests of horticulture seems rather absurd, but I was asked to do so in a way that made it easy to accept the honor, nevertheless I do not find the task an easy one to perform. As an authority on the subject I am afraid I shall prove something like the insinuation which I directed against a friend of mine who in a mood of merriment was holding herself up as, "a model wife", putting the emphasis on the "model". I asked her if she would like to hear a good definition of the word, on receiving her assent I gave her that one which says, "a model is a very small imitation of the real thing". Today, however, we will allow that I am but the imitation, the decoy by which we get a hold of the real, the genuine thoughts of a specific and practical nature which are teeming in your brains, for I shall say in this as I sometimes say in my humble efforts at editorial writing, that it does not matter seriously whether my thought is correct or erroneous, if only it will make the other fellow sit up and think, for himself, right thoughts, and tell them to hte world. And often happens that the expression of a wrong idea, in a place where discussion permits of correction, is productive of better results in the mind of a listener than could ever be obtained had we said something with which they agreed. Today I shall feel that I have done good service for the society if by my mistakes I fill you with an uncontrollable desire to correct my errors and this I shall be delighted to have you do, and you need not fear in the least that I shall take offence at any criticism you may make.

What I have to say on the subject of Tree Planting, is of necessity superficial. My enthusiasm in this regard is born not of knowledge or experience but because of my appreciation of the finished condition. Because my senses are attracted and held by that subtle something in the mind and soul produced by the presence of blue sky, green trees, perfumed shrub, and because in these, in their presence, their arrangement, there is an indefinable influence that inspires, refines, draws out, beautifies, calms soothes, and

brings contentment, because in them, I recognize an influence that developes that which is high and lofty in the human soul because of this I am interested, here lies the source of my enthusiasm.

It may be that the Society expects that this paper will deal with the "what", "where", and, "how", of the actual work, but to my mind the greatest need is, not, "information", but, "inclination". Once arouse the desire, and waken to the advantage, and nothing in this world can stop the onward march. Therefore the point to be emphasized in this work is, "why", and dealing with the matter, under this head whether from the ethical or utilitarian side of the subject, there will be greater results than if we deal specifically with the method of planting and the choice of trees. This of course depends upon whether we are speaking to persons who are anxious to plant and desire more knowledge, or persons who as yet have to be aroused to the advantage, comfort, and pleasure, of this work, but we will assume that all need rousing. It is a lamentable fact that even in settled districts which have had the opportunity of years in which to do this work, tree planting and tree culture have received thoughtful attention from a very small percentage of our farmers, and residents. In many cases the necessity which claims the farmer's full attention for such projects as give quick money returns, and also, the amount of work crowded into our short spring season, has pushed tree planting into the back ground, the majority of people considering it a sort of hobby or luxury. Sometimes the presence of a natural growth of trees has caused the farmer to feel that thought and energy expended in this direction are quite needless. However, in this country with high winds prevailing for a large part of the time, it ought not to be hard to make men see that there is an inestimable advantage in the protection afforded by a well treed ground or shelter belt of generous proportions in the midst of which are the buildings and lawns, safely sheltered in their wooded harbor from the terrific winds which periodically sweep, whirl and whistle about, lashing unprotected plants and tender vegetables into an unsightly and wilted condition, from which it will require days for them to recover. The matter of shelter from winds both hot and cold, and the provision of shade from the burning sun, for man and beast, is not a small consideration by any means in this Manitoba of ours. When winter sets in and the freezing blasts drive the loose snow before them, the farmstead thus protected has a weather condition altogether different from that of the wind swept prairie, and if for this reason alone, the work would be worth while, but we know that the man who turns his attention to tree culture in a generous way, has done his country service, in as much as every effort to improve and beautify our surroundings, is also beautifying and uplifting the thoughts, ideals and aspirations of our people, a distinctly more important matter than the accumulation of dollars and cents, but at the same time is actually getting dollars and cents value. Conscientious work in this direction and honest effort to make every section of the country a delight to the eye, is an activity loaded with the possibility of making the commonest home an at-

tractive place to live in. One has not the same outlook from a mud hut as from a beautiful home, nor have we the same outlook on a bare bleak prairie that we obtained in treed surroundings, nor can the child who is brought up on a treeless farm, with ploughing to the door step, have the same soul as the child who has had the pleasures of a home where attention has been paid to beautifying in the above manner. Our forefathers developed a strong and sturdy manhood in hewing homes and fortunes from the forests of the eastern Provinces. We will develop a finer side of our character in treeing our plains, for our prairies must be beautified and we must see that it is done or ours shall be the blame. What others have done we can do. Fifty years ago, Nebraska was the most treeless state in the Union, to-day it is the best wooded region of the United States, and I am sure we all covet for this glorious West of ours, the time when every farm will have its wood lot of ten or twenty acres, when every home shall nestle among the trees, with shrubs, and lawns, to rest the eye upon, green sward to walk upon, flowers to charm and delight, seats beneath spreading branches or among tapering spruce, and driveways between avenues of stately trees. These conditions are already with us.

Here Miss Playfair gave instances of farms where much had been done along the line of shelter belts, laying out of grounds, and ornamental tree planting, mentioning in this connection Mr. J. J. Ring, of Crystal City; Hugh E. Jackson, of Alexander, and A. E. Creamer, of Baldur, and spoke of the advisability of those who had not as yet begun this work visiting farms where something of this kind had been done. She then proceeded to show that, according to science, trees were reservoirs of moisture, preserved springs, perpetuated rivers, regulated the flow of water, prevented frosts and attracted birds, all of which conditions were necessary to prosperity.

A short time was then spent in showing where, what, when and how to plant, after which the meeting was thrown open for discussion.

Miss Beynon:— I see Mr. Ring in the audience. He can tell us about tree planting.

Mr. Ring:— I do not know just exactly what is the fault in Mr. Jackson's farm, but there is one thing about it, — in thinking this matter over last year I consider that there was one thing to be careful of, and that is getting your trees too close together and too close to the house.

Miss Playfair:— About the building, when would you start with your shelter belt, Mr. Ring, if you were beginning all over again?

Mr. Ring:— The first thing I would do would be to plant out a shelter belt.

Miss Playfair:— Where would you plant it, the windy side, to the northwest? I, myself, have considered that the north and west side was better.

Mr. Ring:— You should have a right angle triangle for your shelter belt, and build it to the west and to the north in order that you should provide protection from the cold winds.

Miss Playfair:— About building the shelter belt avenues. I really cannot get away from the thought that I would like to have those avenues toward the public highway, and the avenues for drives to the house, and in some cases where you leave a large lawn — would 100 yards be sufficient? Supposing you were living on the public roadway, would 100 yards be sufficient for a lawn?

Mr. Ring:— Oh yes, most people do not get that much.

Miss Playfair:— The farm I have in mind is that of A. E. Creamer, of Baldur. He has six acres of trees running to the house. He has two avenues running to the roadway, and having a solid wall to face the wind with. These avenues of trees are far enough apart for a lawn tennis court, in front of the house. The only thing is he has planted his trees too close together. These are things that we should consider in avenues; then the ornamental work as well. Now, then, what shall we plant on our land, what kind of trees? What trees will we use? There is one thing that must be always taken into consideration and that is, what? The essential of the tree to plant must be, what?

A. — The hardiness of it.

Q. — Yes, and the fact that it will grow here at all, and it must be a native of the Province; the seed grown here and transplanted. To get the seedling from Ontario is not a good thing, and I believe that our Experimental Farm provides us with about as much as we will be using at the present time, at any rate. Then, another thing, we must consider the tree that will give us returns quickest, and I want a shade for my lawn as quickly as I can get it. What tree shall I plant?

Mr. Ring:— The native maple is very hardy if it is grown from seed or got from the nursery farm; cottonwood, maple and ash, elm, birch are the pioneer trees of this country.

Miss Playfair:— Can you hear what Mr. Ring is saying in regard to these trees? The best trees to plant. What about pine, spruce, tamarack, birch, poplar and oak for a shelter belt?

Mr. Ring:— If you can get them.

Miss Playfair:— Now, then, for avenues, what trees should we use? I have got down here in order to get through as quickly as possible. When should we plant these? In the spring, I am told is the best time. Is that right, Mr. Ring?

A. — Yes. The plant should be dug up just when it is beginning to bud. The ash leaf maple dug up when it is about ten feet high, and cut down to about six feet and planted, will bring us a small yield inside of two years, is what I have observed. And the three and four year crop giving abundant returns. These have all proved satisfactory in this country. There is also a money value aside from beauty that you will easily calculate for yourselves.

Miss Beynon:— Now, do not be backward. Ask any questions and please give your name, those who are taking part in this discussion for the Horticultural Society.

Mrs. Lydia:— I would like to know, what a woman could do, supposing she were put out on a prairie with nothing green around the whole place except grass in the spring; what could that woman do to get beauty around that little shack?

Miss Benyon:— Mrs. Lydia has asked what a woman can do to get a little shade around her home.

Dr. Speechly:— If you cannot get trees you can get one of the best wind breaks in the world by growing sun flowers, as good and strong and as quick as you want. They grow from eight to twelve feet high.

Mrs. Hack:—Sun flowers will not grow in the grass.

Miss Benyon:— The lady says that sun flowers will not grow in the grass. I think a woman can use a spade.

Q. — Is not the oak tree rather a slow thing to start growing?

Mr. Ross:— I think undoubtedly there is no question that the oak is a slow growing tree, and for general use I do not think it is very satisfactory to try transplanting it. It is considered very difficult to transplant an oak, and if you want to have success I think the usual manner is to plant seed. Now, the native oak we have in Manitoba will grow if you plant the acorns in the fall, but it is very difficult to keep them over winter, and if you plant them in the fall, as soon as they are ripe, you will have no difficulty, but they will not grow very fast.

Mrs. McMurray:— I would like to ask, if you wished to have shade in five years, whether to transplant native maple or sow the seed?

Miss Benyon:— What will give the most shade in five years, transplanted maple or grown from the seed?

Mr. Read:— The native maple will give you pretty good results in five years, if you would happen to be able to get those native maple from Mr.

Ross, when they are about a year old, or better still two years old. You will then get plenty of good shelter back in five years, but they are not the best shelter belt you will get in five years. If you mix maple, cottonwood and ash, the cottonwood will outgrow the maple. In five years it will outgrow the trees ten to twelve feet, and if they are mixed the height of your growth then is the height of the highest tree in it. The maple will fill up below, and if you plant a row altogether of cottonwood, Mr. Ross will tell you that, but if you have trees nicely mixed, both maple and cottonwood, they fill in so nicely, and it seemns they are the trees for this country. They are actually the pioneer trees for this country. Now, if you are unable to get those you can raise the elm from seed if you wish. The seed of the elm tree will fall in June, so you want to be on the lookout. That is the best shelter belt I know of. A proper mixture of those three varieties — we are not talking of evergreen when we talk of shelter belt — and you will do better work by planting those pioneer trees if you want shelter belt right away quick.

Miss Beynon:— Any other question before we go on?

Mrs. Evans:— Is the elm tree grown any place in Manitoba?

Mr. Ross:— It will grow anywhere where soil conditions are favorable for any trees, except in very sandy soil, or in some conditions where natural conditions are very unfavorable and no tree will grow.

Mrs. Lydia:— Are there any vines that can be grown sueeessfully?

Miss Beynon:— What vines can be grown sueeessfully in Manitoba, covering a house?

Dr. Baird: —The Virginia creeper is the vine that will grow more certainly and more rapidly, and the best; there is no trouble. You can find the root along the rivers, and they are extremely easy to grow and satisfactory. They look very well in the summer time and in the autumn, when the leaves take on very brilliant hues.

Q. —Do you have to plant them every spring?

Dr. Baird:— No, never, they come up. The best way is to plant or build a wooden frame up against the wall and they grow over that; they do not have to be taken down.

Miss Beynon:— There was one time, some years ago, a lady wrote in from Carman, and said that she would be pleased to send slips from her garden to any lady who wished them. That lady had no idea what she was getting herself in for. She had hundreds of requests from all over Manitoba,

Saskatchewan and Alberta, and even so far as the western side of British Columbia, asking for slips from her garden — from women, some of whom had only a little slip of paper to write on. It was wonderful how many women there were out in the country who said they had nothing to grow them in but a tin can — and I am safe to say that hundreds of homes in Western Canada have flowers grown from that lady's garden.

FLOWERS, THEIR HELP TO THE HOME MAKER.

Miss Ruth Lloyd, of Morden.

On the farms of this big Western country, where domestic help is so scarce, there is a great deal of work and not very much play for a lot of us women, especially those who live a distance from town and have few, if any, near neighbors. We are thrown on our own resources a great deal for pleasure and recreation, having to get as much enjoyment as possible from such things as are within our reach. Speaking from my own experience, the garden on the form can supply a lot of pleasure, as well as many other needful things, but gardening is such a very broad subject, that I have decided to leave vegetables and small fruits alone, and to mention flower culture only in this paper, as on many farms it is the branch of gardening most neglected. To women especially, flower culture has great possibilities; little capital is needed to start with, a few slips and cuttings of house plants for the window garden, a few packets of flower seeds, some Virginia creeper, wild hops or wild cucumber, which are easily transplanted from the bush and cultivated, supply material for much quiet enjoyment right at home. One reason why flower culture is such a suitable recreation for the home maker is that it gives pleasure, not only to herself, but to all the members of her household, and then, of course, flowers in the home have a very refining influence. Somehow we feel bound to live up to them. A pretty fern on the dinner table improves its general appearance wonderfully, but how out of place it looks if the cloth in not clean? Plants go a long way toward decorating and making a place look homelike; are always in good taste, and will harmonize with any kind of furniture. Of course, they take quite a bit of care, that is one reason why we get so fond of them, but given care, they repay it many times and in many different ways. If they are left without water till they droop badly, there will naturally be a lot of yellow leaves to pick off, and if the repotting is put off till they all have to be done at once, it will be quite an undertaking, and is apt to be put off some more, but, on the other hand, if you keep ahead of your work you will not have to work nearly so hard.

People often exclaim when they see my collection of plants, "How on earth do you ever get time to attend to all these, when you have so many other things to do?" and I tell them quite truthfully that I just look after the plants between times. The question of flower pots does not need to bother one long as there are always plenty of tin biscuits boxes, syrup or paint cans, and these, with a few nail holes in the bottom for drainage, and some crepe paper to cover all deficiencies, do every bit as well as the earthern ones. The most perfect specimen of a red monthly rose I ever saw was growing in a

battered granite-ware coffee pot, and if you could have seen the happy shining eyes of the old German frau to whom it belonged, as she proudly turned it this way and that, pointing out the various buds and blossoms, you would have felt quite sure that the lack of a pretty flower pot did not spoil her pleasure at all.

If flowers are a great improvement indoors they are as much or even more so outside, and in this country, though the seasons are short, vegetable growth is wonderfully rapid, and a great deal can be done in one summer to improve the look of a place. On a number of our farms, and indeed in many of the small towns, it is very hard to get a garden to flourish on account of the lack of windbreaks. So many people put off planting trees till all the other improvements are made, which is a great mistake, but in the meantime a lot can be done with window boxes and flower borders sheltered by the house itself.

Most women can use a saw and hammer after a fashion, so if the men of the household do not think they have time to put up a few window boxes, just wait till there is a good chance to work undisturbed (the surest way to hammer your thumb or get a nail go crooked is to have someone standing by to prophesy such a calamity), and put them up yourself. So much time has to be spent in the kitchen that we should not neglect to make it as attractive and inviting as possible, and a window box filled with sweet scented and brilliant flowers has but to be tried to be appreciated. To make a shade over a too sunny window, take a wooden barrel hoop, open it out, saw the ends off square, then nail an end to each side of the window casing half way up, take binder twine and wind it back and forth from the hoop to the top of the window casing and train vines over all; tall nasturtiums or morning-glories planted in each end of a window box do nicely for this, or a plant or two of wild cucumber or some other vine growing from the ground below. In the kitchen dooryard there is often much room for improvement— ours at home used to be a great eyesore to me — but now I have a most fascinating little garden there not more than twelve feet square, with a walk through it from the kitchen door to a little gate opening into the farm yard, and I am very sure it gives far more pleasure to all the family than the flower garden proper, which is many times as large but situated in a place less frequented. Being so convenient, it gets more care than it otherwise would, also more water, and last year in spite of the great heat, and dry scorching winds, it was bright with bloom all summer long. In a small space like that one must be particularly careful to select flowers that will bloom early, medium and late, but if that is done and they are well cultivated a very small garden will supply plenty of flowers for cutting, much pleasant occupation that is a change from the regular household duties, besides greatly improving the prospect.

By saving the flower seeds that ripen early and exchanging them with friends for other varieties saved from their gardens, one can get a splendid

assortment of hardy flowers in a few years, and these old familiar, common garden flowers being common to all countries, will help more than anything else to make the new homes throughout the West more homelike, and we, who have got well established gardens can do a great deal to encourage their cultivation by sending out seeds and cuttings that cost us next to nothing, but may be priceless to some lonely woman on a far-a-way homestead.

Miss Beynon:— There are a number in the audience this afternoon who have had considerable experience in the west in growing flowers and vegetables, and I am sure there are very many questions that they can answer. If you will ask any question you wish to know about house plants or about gardening, I am sure they will be pleased to answer.

Mrs. Vialoux:— In the way of house plants, I would like to ask how, in the country, one can give them enough fresh air without chilling them so as to affect the root, if you leave the window open?

Miss Beynon:— Mrs. Vialoux asks how to give plants fresh air without chilling them, in an ordinary house. I suppose you mean where there is no provision for ventilation. Will any person answer that?

Dr. Speechly:— I would like to say about this question of ventilating plants; I have a very large opportunity of observing what the ladies do, and I notice that very often they freeze their plants in an endeavor to get fresh air, and I believe the only way to do is to change the air of the room without allowing a direct current to rush in to get near the flower can or flower pot, and I would always recommend the indirect method of ventilation, because flowers are a healthy thing to have in the house, they use up the carbon dioxide gas, and people do not think that they really need freedom from dust more than anything else.

Mrs. Vialoux:— They say there is something in the rust in a can that is good for a plant, therefore plants grown in cans are superior to others.

Dr. Speechly:— I should like to say one word in favor of the old tomato can. I used to look with great scorn on it at one time, but I had an experience last week. I wanted to show my wife a crocus in a window at a florist's. I said, "Look at the nice crocus", and bang it went on the floor breaking. I have seen some very beautiful flowers grown in cans. I am sorry to see cans going out of fashion.

Miss Beynon:— Any other question?

Q. — I should like to know how to keep the soil around a plant from getting lumpy without disturbing the plant?

Miss Beynon:— She wishes to know how to keep the soil from lumping, which she cannot get at without disturbing the plant.

Dr. Speechly:— Does she refer to pots or cans?

A. — Pots.

Mrs. Vialoux:— I think if she put some more sand in it would help her.

Mrs. Starr:— It is a good thing to get a stick and stir up the soil, it will help.

Dr. Speechly:— I might suggest a hairpin.

Miss Beynon:— Anything else?

Dr. Speechly:— Just one point. People often forget when there is any building done, to get some old sod and use that for planting your plants in. You will not get nearly the caking of the soil. A little rotten sod in the pot helps enormously.

Mrs. Walker:— Any moss forming around the edge of the pot should not be allowed to collect as it prevents the water from soaking through the soil and getting to the roots of the plant. A few stones in the top of the pot would help this.

Miss Beynon:— Mrs. Walker is emphasizing the necessity of proper drainage for plants. Have stones on the top of pots and do not allow moss to collect. There is one thing I would like to hear about, and that is the culture of roses.

Mr. Ross:—Inside or outside?

Miss Beynon:—Inside.

Mr. Ross:—I do not know anything about it.

Dr. Speechly:—I do not want to talk too often. I have not cultivated roses myself, but you will understand, when anyone is interested in this topic, one has an opportunity of seeing what the ladies do with their plants, it is a bond of common interest, and I do not think myself that those who are successful with these small baby ramblers, they do not make any very special scheme, they allow for good drainage and, I think myself, that if they used more sod in the bottoms of pots they would have more success, and they need very little soil and pack the roses down well and keep the soil on the surface loose and not water them too much. People often forget that if they have a saucer underneath the pot they can allow the plant to do its own absorption. The roots should go down to the water instead of pouring it on the top.

Q.:—I would like to know what kind of soil to use in repotting a fern?

Miss Beynon:—I would like to know that myself.

Mrs. Vialoux:— Is it not so that if one will go to the woods and get leaf mould and mix it with garden soil, does it not make an ideal potting material?

Miss Beynon:—Have you success with your ferns, Mrs. Vialoux?

A.—I have not tried them.

Mrs. Phair:—If you do that you will find worms in your soil. If you do not put them in the oven and heat them they will destroy the plant.

Dr. Speechly:—That applies less to ferns than anything else. Would you mind telling us your experience, Mrs. Phair?

Mrs. Phair:—We just use some sand and a fertilizer, and not allow the roots to touch the fertilizer.

Miss Beynon:—We still have another discussion in which Mrs. Vialoux has had a good deal of experience. She is an old timer and knows what it is to tend to children, and we will ask Mrs. Vialoux to come to the platform.

Mrs. Vialoux:—I hope you will be very kind to me indeed, because this is the first time I have spoken in public. I would like to tell you about my garden.

THE GARDEN IN THE LIFE OF A BUSY MOTHER.

By Mrs Vialoux, Sturgeon Creek, Man.

I have been asked to speak to you today in regard to the outdoor life a busy wife and mother should take up if good health, a clear brain and bright spirits are to be the heritage of we women of the west. Our life is of stern neeessity, much too strenuous in this land where help indoors is not to be had for love or money, even a wash or scrub lady is deemed a luxury in country districts that the majority of us must needs do without. How on earth are we to cope with all the hard work and worry of the busy farm life and keep our nerves from going to pieces? I am sure more than fifty per cent of the illness and breakdown in the country is due to nerves.

The only solution of the question that I can see is to leave our hot cook-stoves and get out of doors as much as we possibly can during our glorious Manitoba summer; but we argue, "How dare we spare the time from pressing houshold duties?" I have found it wise to take time, and now feel it is not a theft at all, simply a plain duty to myself and the children to leave the house for a certain period each fine day in summer and autumn and turn my attention to the garden and poultry-yard. I advise every woman to make up her mind to do the same. Put on a short skirt, broad brimmed hat, a pair of duck gloves (the two pairs for a quarter kind- if you wish, as work in the garden is hard on ones hands. If the babies are awake take them too, using the useful packing box for the wee baby, and insist upon working out of doors a couple of hours each morning. I find I gain not only splendid health for myself and the bonny rosy bairns, but a good many stray dollars as well which do not come amiss when I go shopping.

Now, my friends, do not imagine I do not know of conditions on the western farm, because I was born and bred on the nicest old pioneer farm you can think of, and know all about "chores" — the bugbear of farm life to many, milking, churning, feeding calves, preparing for threshers, putting up field lunches, having served an apprenticeship at all of these things from childhood.

When a child, my sisters and I had to toddle two and a half miles to school daily, and we always did chores as well night and morning. I remember learning to milk when eight years old. But I maintain the busy farm life is full of interest as well as profit, if we only live it in a rational way and insist upon our playtimes in spite of work. I can thank a wise mother for this outlook.

Another thing I believe in is that women on the farm should have every labor saving device of real value on the market (they say the motor hired

girl is a treasure). Our men folk have nearly everything under the sun to lighten their labor, traction-ploughs, the best binders, whilst farmers' wives struggle on with the same worn out tools year after year. Then farmers' wives wonder if they were ever young and why they have become nervous and worn out.

I want to-day to tell you of my garden of which I am very proud, the panacea of many ills. The garden is now nearly four years old, having been broken four years ago last fall, after the roots and trees had been grubbed out, and our first little patch was put in on the backsetting somewhat late in the season. However, the green vegetables came on well until the two hundred chickens came. The two hundred chickens were not yarded in any way, "presto pass", away went the garden, gobbled down their greedy jaws, at least the most of it; the fowls did leave us a few potatoes and some beans, that is about all. I decided there were two ways of killing a cat. I could not give up chickens, my hobby for some years. I would have a garden too, so the next spring we fenced out the chickens and fenced in the garden, using six-foot meshwire, fastened to an ordinary barbed-wire fence that encloses our three and a quarter of an acre garden, at least we put the woven wire around the greater part of it and made the hens believe it extended right around. With the help of the "mere man" I made a nice little hot-bed that spring and it grew splendidly. We had put in a layer of leaves between the heated manure and the garden soil which formed the seed-bed. The double windows were used for glass and as it was in the backyard near my chicken-coops and clothes-lines, the looking after it was only a pleasure. An old wagon-box made an excellent cold frame. This was put in a sunny spot near the hot-bed. The garden was well manured, fall ploughed and spring ploughed as well, which makes an ideal seed-bed. The planting was chiefly done with a little garden seeder; though some vegetable-seeds were put in half-straight with the help of a garden line (crooked eye). The garden is well sheltered with trees on three sides of it, on the east we planted our currant bushes, gooseberries, raspberry-canes, a rhubarb bed and a patch of asparagus. Then come the tender green vegetables, including some early potatoes all within easy reach of the house, then on the west side of the garden I plant rows of sweet-peas, golden-glow, in clumps and a few other perennials just to make a pleasant spot of color on entering the garden. Going south we have a portion of the ground worked up very mellow for all the transplants, cabbages, cauliflower, tomatoes, celery, etc. Then come rows of favorite sweet-corn on one side and beds of cucumbers, citrons, marrows, on the other side, the remainder of the garden is given over to our main potato crop and field-roots, mangles and sweet turnips. As a rule the hot-bed quite pays for the trouble it entails as I find the plants grow better than those I buy setting them out is not all difficult. I train the small boy to help me do all these jobs and though sometimes he has hoed out precious seedlings he has learned a great deal.

I tried the wonder-berry a couple of years ago and got some nice little transplants well started in a thrifty row, Galician Willie cheerfully swung the hoe as I left the garden, upon my return I found several limp little wisps of green, all that remained to tell the tale of the wonder-berry, "Velt, I tot they wuss veeds", said Willie.

A wee pony to use in the "Planet-Junior Cultivator," a hoe, rake, watering-pot and a useful boy aged twelve comprise my gardening outfit and I think we all enjoy working in that plantation. The ordinary vegetables are seeded in rows three feet apart to allow the cultivator to work between them. I try to keep the soil loose in this vegetable patch by often giving it a gentle stirring, keeping down weeds as well. How I love the morning in the garden, just get the breakfast out of the way, chickens fed, no small task when the flock runs to couple of hundred. From eight to ten I work away getting tired of course, as "old Sol" grows hotter, but enjoying every moment as the digging and delving goes on in the cabbage-patch. There is interesting work to be done and pleasure to be gleaned from every blossom. As the heat comes on I leave the boy in charge and turn to the cool inviting house ready for the necessary routine indoors. My lungs filled with fresh air, my mind full of pleasant thoughts. The babies have gone asleep, soothed with the rustling leaves. I am able to bring in lovely crisp vegetables for lunch, lettuce, cress, radishes and green peas, and feel I can easily dispense with pies and cakes, when my garden gives me such delicious dishes, "fit for the gods," without much preparation. Later on we enjoy ripe tomatoes, kissed by the sun, sweet corn, crisp celery, cucumbers wet with dew; — reward for our labor surely.

We usually grow heaps of vegetables for family use and have plenty to spare. Two years ago we harvested 90 bushels of potatoes from our garden and sold fourteen dollars worth of tomatoes, besides using all we possibly could.

Miss Beynon:—Mrs. Vialoux refers to the Wonder-berry. A lady in British Columbia offered this Wonder-berry in exchange for something she wanted, and a lady sent for it. Some people say it is absolutely no use, others tell me it was lovely, and others medium. I am very much interested in the Wonder-berry.

Mrs. Vialoux:—I have the Wonder-berry jam and it is alright.

Miss Beynon:—Is there anything you would like to discuss?

Q.:—I would like to know something about asparagus culture.

Mrs. Vialoux:—Well, I have my asparagus garden well started, and it takes some time before you can get some return. We worked up a rich bed and got two-year old plants and put them in eighteen inches apart. They

are doing very well and I hope to have the pleasure of cutting asparagus this spring. Next year I will give a top dressing of salt. We had very rich soil and I got good reliable two-year old plants.

Mrs. Larkin:—What protection do they require in winter?

Mrs. Vialoux:—I do not give them any. Of course, if you are out on the prairie you would be wise to use branches to break the cold winds, but where you have shelter back I do not consider it necessary to give asparagus or rhubarb, or any of those things, any protection whatever.

Miss Beynon:—Perhaps Mr. Holland will tell us something about it.

Mr. Holland:—Well, I have grown asparagus. I grow asparagus in the old-fashioned way, digging out a large trench about four feet deep and filling it with a quantity of vegetable matter; the soil on the top of that rich good manure, and I previously raised my own plants, but I could not advise any one to do that, it is better to buy your plants, as you save so much time. I have no experience in the more modern way of growing asparagus. I believe now it is considered quite unnecessary to dig out that deep hole we always used to do. I believe if you enrich the soil well and cultivate it, it is quite sufficient. The thing is to plant your asparagus sufficiently deep and it is best to have the soil rather lower than the surrounding surface when you plant them, so that in the following year you can cover the root more deeply. It is very difficult to keep up good cultivation without injuring asparagus roots. The lady just speaking referred to the protection of these. The asparagus I think is better without protection, because it is apt to come up too early. I think it is very apt to have the first shoots cut down by frost. I have intended to ask for another's experience in regard to rhubarb. My own practice is never to put on manure in the fall. I put manure on in the spring. Then, if I put it on in the fall — rhubarb is a very greedy vegetable — and if I put manure on in the fall I imagine it holds the frost in the ground and makes the plants later. My practice is to put it on in the spring. I should like to hear some other speakers who have had experience on that point.

Miss Beynon:—Is there any person here now who would like to discuss the subject of rhubarb?

Mrs. Hall:—I have grown rhubarb and find it is not easily grown. We have tried and we are apt to believe it is just land thrown away. I cannot speak from experience, but the best bed of asparagus I have seen in Manitoba was in a garden in St. James. We planted on the surface of the soil, a good rich garden, no trench nor anything of that kind. As for Wonder-berries, I would not give five cents for all the Wonder-berries ever grown.

Miss Beynon:—Mrs. Hall says she would not give five cents for all the Wonder-berries that were ever grown, and she says the best bed of asparagus she has seen was grown on the ordinary garden soil, apparently without any protection for the asparagus.

Mr. Holland:—I planted some rhubarb in a belt of coon-grass. I planted some rhubarb there in the hopes that it might prevent the coon-grass from running in my garden. That rhubarb planted in the coon-grass sod is the finest I have ever had.

Q.:—Will you tell us how they keep cut-worms from eating off cabbage in the spring?

Mr. Ross:—I think the method usually employed is to take bran and dampen it and mix it with Paris green and put this along the row, also you can stop quite a lot of damage by going along in the morning and noticing where a plant is cut off, if so, remove the soil just around the base of this plant. You can kill the worker, and this will prevent it eating any more.

Q.:—I would like to say that, in regard to killing the worms that way, with Paris green, to watch that the chickens do not get it, because I tried it and it is very dangerous. I lost some of the plants and all my chickens.

Miss Beynon:—The lady says she lost all her chickens by using bran and Paris green. Any other question?

Q.:—I would like to know if the cultivation of the soil has anything to do with the fact that rhubarb is very sour.

Miss Beynon:—Is it the variety or the cultivation?

A.:—The variety.

Mr. Ring:—Is it rhubarb you are speaking about?

Miss Beynon:— Yes.

Mr. Ring:—I do not like it at all.

Miss Beynon:—Mr. Ring is like Mrs. Hall with the Wonder-berries, said she would not give five cents for them. The next paper is "Influence of flowers in the home". This paper we will ask Miss Juniper, professor of Domestic Science in our college here, to give us a talk on.

Miss Juniper: I want to tell you what a great joy flowers have been in my life and in many of the lives of those whom I have lived with. I think there is nothing so beautiful in the world as flowers. I recollect many years

ago that we thought everybody should read a little poetry every day; it had a softening and refining influence, and just as poetry is the cream of fiction, so I think flowers are the cream of hope. I want to show you how I would use flowers to train children to understand beauty of form and color. We cannot always go to a picture gallery, but there are some rules I think we can teach through flower arrangement in the home, and I do urgently implore you to cultivate love of flowers in your children while they are young.

SIX STANDARD PERENNIAL PLANTS.

Illustrated by Lantern Slides, by Dr. H. M. Speechly.

I have chosen these six perennials as subjects for discussion this afternoon, first, because they are, possibly with one exception, plants of the hardiest nature: secondly because, in leaf and flower, they are all very lovely; and, lastly, because each type has many variations. Given, then, a perennial with such a trinity of points you may be sure that you will have a plant of much value for our North-Western gardens. There are some flowers, too, that have a peculiar value to those of us who can see the true spiritual side of a garden of flowers. I mean the power that certain flowers have of awaking tender chords of feeling for home and its gracious associations of love and youth, a power that, long spaces of time after youth has fled from us, melts the hand crust materialism and makes us feel young.

Let us take them according to their seasonal growth. And first is the columbine, sometimes called aquilegia. I prefer the first name, not only because it recalls visions of "Mary, Mary, quite contrary," but also because it requires very little imagination to connect the derivation from the Latin word "columba, a dove," with the dove-like shape of the sepals. Aquilegia, for a scientific name, is attractive and easy to pronounce, and is derived from "aquila, and eagle," in reference to the hooked nectaries which are likened to an eagle's hooked beak. Columbines are alpine and meadow perennials of the buttercup order, which offer a great variety of delicate shades of white, blue, rose, buff, yellow, scarlet or purple. We grow them for their early hardiness, their quaint form and their color, not for their scent. The foliage too, so freshly green, is by no means its best charm. High in the Rocky Mountains, low in the English dells, upon the Siberian steppes, or away up on the Altar range between Siberia and Mongolia, as well as in our own bush districts, the dainty columbine abounds. It likes a good soil, plenty of individual space, and a shady cool spot, rather than the full blaze of sunshine, where, from seed sown this year, it comes to maturity two years later.

Our second slide shows the iris, the German variety, wall called "the poor man's orchid", an excellent name when you consider the delicate beauty of the standards and falls of the commonest varieties, which any decent gardener will give away for the asking. This is the national flower of France, elegantly styled, by a nation given to natural eleganees, the "fleur-de-lis"; that is what the Mennonites in southern Manitoba call it too, I am told. Equally pretty is the name "iris," because in the old pagan poetry of Creece and Rome, Iris the godess whom Homer personified as

the messenger between gods and men, gave her name to the rainbow. Note the marked contrast between its plain sword-like leaves and the rainbow tinted flowers so delicately veined and patterned. For the North-West the German kinds, rhizome rooted, and the Siberian, with tufted roots, are the best. Do not try the bulbous Spanish and English varieties, because they will not stand the climate, which is also much too dry for the Japanese iris. About the end of May, just when yellow single tulips are blooming, I have a dwarf dark-blue iris in bloom, but the others are June-blooming. Last spring was too dry for most of the tribe. Divide your clumps often, and in the fall, which is the best time for re-planting. In fact you have to divide up your clumps after two years or they will over-run the garden.

Next in order, and toward the end of June, the oriental poppy will flame out amidst the rising greenery most gloriously. Is it orange or is it red, with black based petals, this huge flower, like a big tea-cup for size? Place it in the middle of your perennial border, not too far back, where its rough haired feathery leaves show off their beautiful pattern. It is as hardy as horse-radish and requires a fair amount of elbow-room. Its tap-roots run deep, but in July the foliage soon withers down, when it may be cleaned away or allowed to disappear beneath the pressure of its successors on the stage of life.

These two last have but little scent, not so our fourth example, the noble generous paeony. Yes, that is the way to spell it, because it is named after an old Greek doctor of medicine, Paeon by name, according to Homer. in fact, to be called "a son of Paeon" meant "a physician", and Dr. Paeon it was who used the roots of this plant we call the paeony for healing purposes. My friend Mr. C. S. Harrison, of York, Nebraska, says that, in the mediaeval times, "the seeds were taken at bedtime to prevent nightmare, steeped in liquor and drunk before and just after the new moon, it was a sure cure for weakness of the back. If children were sick, then a piece of root must be hung about the neck". And Mr. Harrison goes on to say, "we well remember, in the days of small boyhood, the gardens were searched for "piny toes to steep for us when we were sick"! And so it comes that lots of people know paeony better when you tell them about the "piny rose", which twenty to thirty years ago was almost the only common type. The old "Officinalis Rubra", whose blooms are a dark glossy purple-red and rank in odour, so unlike the many improved types, such as "Festivia Maxima," with the delicious odour of a rose, notice how the slide shows the suitability of the peaony as a border plant along a drive-way especially if well sheltered by trees, but remember that it dislikes any competition with strong-growing roots of shrubs or trees. Even when its flowers are gone the glossy leaves are very handsome. To my mind it is far better to grow paeonies than roses in the average North-western gardens. I do not say that you cannot get good results with hardy roses in certain favoured localities, and by careful management, but for rural gardens

by preference get a good selection of paeonies from men who have good stock in Canada or from C. S. Harrison, of York, Neb., or D. F. Brand, of Faribault, Minn. They will put you in the way of securing a whole month of bloom from late June onwards. One or two points worth knowing about the Paeony are these. After transplanting paeonies do not bloom well until the third season following; and some paeonies will never bloom at all, being barren. Treat these latter after Mr. Harrison's advice, "throw them over the fence or put them in the bargain counter for that five-cent individual who wants the very cheapest." Again, some paeonies bloom well only in certain localities and all resent the neighborhood of spruces or maples whose vigorous root growth is too exacting to the paeony. Do not ask for a little seed so that you may raise seedlings, because it takes three to six years to get any results. Our modern paeony is the result of patient crossing of varieties from China to Siberia, Japan and Asia Minor. In planting roots do not break the buds which must be two or three inches below the ground; nor must you snap the roots, but give them lots of room, and place them in a sloping position, about an angle of forty five degrees.

Our fifth slide shows the tallest growing perennial in the list, the stately Delphinium, a Greek name supposed to have some connection with the temple of Apollo at Delphi; but I much prefer the home-like name of the larkspur, so called because the nectary is like the spur seen on the feet of certain larks. If this plant will grow abundantly in the valleys of the high Thibetan plateau, 12000 feet above the sea, it is not surprising that it is quite hardy for the North-West. But you must protect it from strong winds by planting it in clumps or rows near your shelter-belts or else its spires of lovely blue, blue and white, or purple, will never reach their normal height of anywhere from four to six or even eight feet. The flowering time is round about July 15th; and they seed so abundantly year by year that it is necessary to keep the plants thinned out. The proper place for the tall larkspur is right at the back of the perennial border, where its leaves and stems form a handsome background to all other herbs.

My last slide shows a plant which blooms much later than all the rest, so late, that sometimes the early September frosts are liable to spoil its bloom. "Phlox" means "a flame," and certainly the brilliance of such varieties as Coccinea justify the name, especially when grown en masse, as in the picture. I think those of you who have grown the tall perennial phlox wil agree with me that it is rather more tender than any other perennial named in this paper. In the fall, when flowering, it needs plenty of moisture and requires either careful mulching or watering, or both, if you wish to get good flowering heads. Roughly speaking there are three kinds of perennial phlox suitable for the garden, these are, in addition to the tall phlox, the dwarf Subulata, of which our Mr. A. P. Stevenson speaks well, and the creeping Reptans variety. Place your tall phloxes in clumps and in the middle back-ground, where their foliage is useful all the spring and summer.

Now, just a final word as to cultivation, which is applicable to all six perennials. They all like rich soil, but beware against applying fresh manure, especially if it be chicken manure. The manure must be well rotted and well worked into the soil so as to become part of the soil. And the two best months in the year for planting are September and October, avoiding the latter half of October if possible.

Miss Beynon:—The last paper on the programme this afternoon is "Memories of an Old Time Garden," by Miss Hind. Recently, at a convention, she gave a paper on "Labor-saving devices for women," and the women were so enthusiastic that men came to her and said she was making trouble. I have no doubt she can give us as many pointers on an old time garden.

MEMORIES OF AN OLD-TIME GARDEN.

Miss E. Cora Hind.

A child who grows up in a city and with no associations with a garden is to be sincerely pitied. My own earliest recollection is of a hilltop in Ontario, the highest gradual rise in the whole of that great Province. A big farmhouse, with its gable end to the road, and, lying in the rear of the house and to the south of it, a wide stretch of garden. It was traversed by a rose walk, and I can shut my eyes now and smell again the perfume of those roses on a June morning. Interspersed with the genuine June roses were bushes of moss roses of rich, velvetly red. The cabbage rose — which is really the mother of the "American Beauty," now so much sought after, — was considered very plebeian and was allowed to bloom in the seclusion of a back corner. There was a little tool-house at the end of the rose walk, which was always covered with scarlet runners and purple morning glories. There was a hedge of lilacs and sweet brier, and where the paths turned at right angles to the south were great clumps of French peonies, as fragrant as any June rose. Sweet Williams, iris, Star of Bethlhem, London pride, phlox, blue rocks, prince feathers, marigolds, canterbury bells, and, at the very end, orange lilies. There was no set flower garden apart from the vegetables, but the flowers seemed to be everywhere, in borders and clusters. Along the south side of the house were fruit trees, one big cherry tree and one Damson plum tree overhanging the roof of the kitchen, a safe retreat on either a July or late August day, according to the season, you ate either cherries or plums. The beds below the fruit trees were bordered with chives, with their tiny purple flowers, like miniature hyacinths, their faint flavor of onion being considered to lend the proper piquancy to mutton broth. In a north corner of the garden were the Jerusalem artichokes, delicious vegetable which one so rarely sees here, excepting among the French families. This garden was divided from the main garden by a stately row of dahlias, which, flowering late, made a gorgeous belt of color until the heavy frost came. A stretch of the garden was devoted to raspberry and currant bushes, red, black and white, and I can still see in my mind's eye the big flat boulder in the centre of this patch, and, standing on it, what was known to our childhood as the porringer, a big old-fashioned cut glass dish on a high stand. It was a mark of merit to be allowed to carry this to the garden, line it with green leaves and fill it, first with red respberries up to the brim, then to erect a mound of black ones, and cap the whole with a final pyramid of white raspberries. This, with the accompaniment of cream, was considered a dish fit to set before the choicest company. Looking back now, I am sure that that raspberry

and current patch must have yielded enormous quantities of fruit I know the bushes were very carefully tended and kept in perfect shape. Next to the raspberry bushes was a huge strawberry patch which yielded scores of quarts of berries, the picking of which never possessed the same charm for us as did that of the raspberries. Another huge boulder marked the boundaries of the strawberry patch and beyond that were spaces devoted to early potatoes, peas, cabbage, carrots, beets, parsnips, celery and tomatoes; and beyond all this again were the gardens allotted to us as children. There was only one rule about those gardens. There must be no weeds, but we might grow anything else that we chose; and some very funny combinations were the result. I remember, one summer my whole garden consisted of a cucumber vine, a citron vine and one row of onions, always a favorite dish. My brothers made great fun of my garden, but, possibly because I was jealous over my two plants, my citrons were the largest and my cucumbers the most numerous of any vines in the garden that year.

This is not intended as a paper of instruction, but merely, as its title indicates, some of the pleasant memories of a child in connection with the garden. Left an orphan at two years old, I spent the greater part of my life until I was ten years old in that garden, trotting after my grandfather and eternally asking questions. Thus I learned a number of things about the garden: to weed deftly without injuring the plants that were to remain; to thin out the beets and the like in such a way that the rows would remain symmetrical; to prune a tomato plant so that the growing fruit would receive the maximum of sunshine, without injury to the plant from the removal of too many branches and leaves; to plant certain vegetables, such as lettuce, onions and radishes, in the proper order of succession so that the supply of these would never fail, and, at the same time, the bed in which they had been grown should be utilized for other things as the season advanced. The bed for this purpose was a long and somewhat narrow one. It stretched across almost the entire length of the garden. It was carefully prepared, very neatly ruled off, and you began at one end and planted five rows each of lettuce, onions and radishes. Ten days later you repeated the process further along the bed, and so on to the end. By the time the first rows had been used there were beans to be transplanted or possibly some early celery. The whole scheme of the garden was to have a succession of vegetables throughout the season, and to be able to use them without rendering the garden unsightly or untidy. One of the laws of the Medes and Persians, with respect to the garden, was that no weeds that had been pulled up, potato vines or waste of any kind could be left upon a garden bed. Everything of this nature was removed to what was known as the compost. The compost was a little natural hollow in the grass field, closely adjoining the garden. Its unsightliness was shaded from the garden by a rough arbor of poles, covered with hop vines. Garden rubbish lawn mowings and everything of like nature were to be put on this heap, lightly sprinkled with soil and wood ashes, and left there to decay in the hot sun. There was

no odor from this heap, but the following spring it served as an excellent fertilizer for the garden beds.

I remember a scheme for growing cucumbers which my grandfather followed from year to year with wonderful success. You dug a hole in the ground, about two feet deep and two feet across. In the bottom of this hole you put, first a little compost and then fresh horse manure, covering all with about six inches of soil, making the whole level with the surrounding ground. Then you took a stone jar, say an ordinary butter crock with straight, smooth sides. You set this in the middle of what had been your hole, and built the soil up all round it to within an inch of the top, packing it close and tight; then, with great caution you drew forth the crock and left a deep, smoth, straight hole. At the bottom of this hole you planted your cucumber, citron, pumpkin or squash seeds, covering them with about two inches of soil, thrown in lightly and gently pressed into place. Then the top of each hole was covered with a pane of glass, — broken glass from windows and such like being saved for this purpose. Very shortly the heat from the horse manure produced moisture on the glass end, in fact, each one of those hills was really a miniature forcing frame. By the time the plants had reached the top of the hill all danger from frost was over, the glass would be removed, and the vines, coming up quick and strong, would spread over the hill in all directions. By following this method cucumbers were abundant quite early in July, and the yield was tremendous. Early potatoes were quite a feature, and ash-top kidneys (a variety which, I believe, is now out of date) were always planted for early use. It would have been considered an absolute disgrace not to have had potatoes of our own growing on the 1st of July, and one of my most vivid recollections is that of being hurried into a clean pinafore and started out, basket in hand, to some friend or neighbor, saying all the way as I went, "Grandfather's compliments, and will you be pleased to accept of a few of his early kidney potatoes." Many a neighbor, careless about a garden, enjoyed almost as many early vegetables as if he had taken pains to grow them himself. I think the discipline was excellent. We, as children, were made to feel that the garden was not for ourselves, but for all who needed it. I am sure that it is no exaggeration to say that the garden produced ten times as much as it would have been possible for our own family to consume; and yet nothing ever went to waste. Early peas, beans, cabbage, in fact vegetables of all kinds, were shared with less fortunate neighbors, grandfather's theory being that if a man was too shiftless to make a garden for himself, his wife and children should not be deprived of vegetables on that account.

Grafting was a favorite pastime with grandfather, and, as a very small child, I recollect being led to assist in the ceremony of grafting a June rose on to a black currant bush. How eagerly we watched for the growth of that graft, and when, in the course of time, the roses, large, soft and pink, striped with black, like velvet, were growing there, we felt that we had assisted at a ceremony that was world-shaking in its importance. I suppose

that there must have been times when my brothers and myself rebelled at the weeding, and thought it hard and dirty, but if so, I have no memories of this. My recollections are always of the joys of that garden. From the time in early spring, when the plants which remained in the ground all winter began to send out their tiny shoots of green, to the dull, cold fall days, when the strawberries were covered with a mulch of straw, the roses and the currant bushes tied round with straw ropes to prevent their being broken down with the weight of the snow, that garden was an endless delight. The races that we ran, carrying vegetables into the cellar for winter; the pride we took in the symmetrical pyramids of beets, carrots and parsnips, piled with layers of dry sand between them to keep them from shrinking; the cabbages pulled up by the roots and hung from the beams of the cellar, the long slatted tiers of big, red onions; the rows of dark green squash and gorgeous yellow pumpkins, which it was our duty to turn every second or third day to keep from decaying on one side; the potatoes that must be kept in separate bins according to their varieties, because some were good to bake, others were most suitable to fry or scallop raw, and yet others were the choicest for boiling purposes. Were that cellar still in existence I think I could go in the dark and put my hand on the place where each variety of vegetables was stored. The garden was in the country of Grey, not far from Owen Sound, and that, and its altitude, made it difficult to grow apples. I can remember very distinctly the excitement of harvesting the first apples from a new variety of tree which grandfather was trying. I remember, too, the experiment in grafting a French crab on a little old apple tree that must have been in the garden from the time the land was first cleared. It produced little russet apples of the most colicky variety, in fact, apples which no one, excepting a child who had been forbidden to touch them, would ever dream of eating. I cannot recollect very clearly whether this grafting was a success, but I think it was, as my later recollections are of russet apples with one very red cheek, which were regarded with great favor for baking in a big stone jar.

One of the special holidays of springtime was a day devoted to getting from the woods long, straight, slim poles planted about three feet apart, the poles brought together at the top and firmly tied with a strong cord that ran the whole length of the rows. The beans would come up over these and form a complete arch, and the loveliest imaginable places for playing hide-and-seek.

That garden gave me my first impetus towards all things agricultural. It taught me the beauty of order and method, the blessedness of being able to give, and, in short, it has been, throughout my entire life, one of the most beneficent memories I have had. There was a seat under the old apple tree, and there, in the intervals of gardening, grandfather sat and smoked his pipe and answered endless questions, telling me wonderful stories of the early years of the nineteenth century in England; for his first recollection was of the mourning in England when the body of Nelson was brought back

from Trafalgar. He was a man who had travelled much, observed keenly and retained, up to the age of eighty, a boy's keen interest in everything new. He had the gift of making things grow, and a new variety of fruit, vegetable or flower possessed for him a thrilling interest which he succeeded in some measure at least in imparting to my brothers and myself.

I asked my brother for some of his recollections and I will read you his letter. "You asked me for some of my memories of the old garden. well I recall that grandfather's currant and gooseberry bushes always stood on one leg, this made it easy to cultivate round them, and, though I fancy the yield was perhaps not as heavy, the fruit was larger, and things always looked spick and span. I have tried the same plan with good results. Then there was the beautiful herb garden, one of the loviest things in a garden to my mind. I recall sage, mint, thyme, chives, sweet marjoram, summersavory, and I know there were others. I wonder if you remember the English Damson plum tree, beside the back kitchen door that opened on the garden: there were other fruit trees out there, but the memory of those Damson plums lingers with me. The dear aunt always made the birthday puddings from that tree. There are many things I learned then that are coming back to me now that I have a bit of dirt on my own to puddle in. The sweet peas grown in a trench, a double row, and as they grew they were filled in with earth that they rooted deep and were not withered with heat to the same extent. Then the magnificent vegetables — was there ever such carrots, parsnips, cabbages, cauliflower, salsify, radishes, lettuce, as grandfather raised. I still cling to the varieties he used and have found them as a rule the very thing. Of course, the soil I have in my city garden is poor compared to what he had, but I have not done badly considering all things. Do you remember the great long scarlet radishes that used to grow in that old garden? I have never seen or tasted anything like them anywhere, nor, for that matter, anything like the crisp white celery, so tender it broke if you touched it. I have never tried to raise celery, but om often tempted to try it. I am afraid my soil is too poor. I can see now the rich dark soil that grandfather filled into the trenches; I fancy it must have been leaf mold. Oh, do you remember the gooseberries? My, what luscious berries they were. You will easy say that is the appetite of a boy talking, with no taste like the old taste. I wonder if you remember the bit of pasture at the corner of the garden where the mushrooms used to grow. I have often filled a dishpan with them before breakfast. I do not know if these memories will help you, but they helped me many a time in the barren days when I had no garden of my own, and kept alive the determination that some day I would have an old fashioned garden of my own".

My object in bringing these memories to your attention is not because I think them, in themselves, important, but merely by way of suggestion of how much the future happiness of your children may be bound up with

the gardens which you have to-day been urged to make. Gardening is profitable for more things than the money for which its products may be sold. It means present joy and future beautiful memories for the children who work and play about it.

Rev. Dr. Baird moved to thank Miss Beynon and Miss Hind for the successful way in which the meeting was conducted. Mr. W. G. Scott seconded the motion.

Thursday Evening, February 16th, 1911.

Dr. H. M. Speechly, in the chair, called on Mr. Peter Middleton to say a few words.

Mr. Middleton.

Mr. President, ladies and gentlemen:—I can assure you that it gives me very great pleasure indeed to say a few words to you to-night; you have given such a hearty welcome to me in connection with the Brandon Horticultural Society. They sent me down to represent them here and to tender their greetings. We are doing work much along the same lines that you are doing here. We thought at one time that the Brandon society was about the first in Manitoba, but now I think we have to take a back seat after the splendid demonstration by the ladies of Winnipeg and Manitoba. I might say, this afternoon, it certainly was an inspiration, and the ladies certainly can put horticulture before us in excellent form. Ladies and flowers are always associated in my mind. I certainly was delighted with the excellent papers that were read here this afternoon. The afternoon was conducted in such a way that I think the mere man is out of it altogether. I think it was the best conducted session this afternoon that ever I saw at a Winnipeg convention. Certainly we look to you for rapid strides in horticulture. You have several societies, I believe, in your city, and we look forward to the time when you will have wonderful gardens and botanical societies. Now, Mr. President, I will not hinder you further than to thank you for the excellent opportunity you have given us. Thanking you very much.

Dr. Speechly:—There are certain things I would like to bring before you. In the first place, we have to lament the death of a very distinguished horticulturist. I allude to the very distinguished head of the Horticultural Department, Minnesota State agricultural school, the late Prof. S. B. Green. It is with sorrow we recall his memory. He worked hard always and did everything at the top of his power, and I suppose it was owing to the high-pressure under which he lived that he was brought to an untimely end. There will be a resolution brought in for this Society to pass, condoning with our sister Society, the Minnesota Horticultural Society. We also have a matter to be sorry for, and yet to congratulate ourselves on. We have to condole with our worthy secretary, Professor Brodrick, who has been the life and soul of our organization here for so long, for being on a bed of sickness so recently. I may say that he and I have worked together with such harmony, and have written to each other so frequently, that we might be lovers. Professor Brodrick and myself had arranged to send to every member of Parliament a statement of our financial position, and we had everything planned out beautifully, when he was taken ill and everything was temporarily stopped. We are to meet the Legislature to-morrow, and we are to interview them with a view of getting them to see that this Manitoba Horticultural and Forestry Association has a convention of great importance.

It must be obvious to those who were here this afternoon that the chief thing the people of Manitoba want to know at the present time, in regard to horticulture, is a large amount of what you call elemental facts. Mr. Brodrick, Mr. Buchanan, Mr. Stevenson and myself get long letters from people, evidently thirsty for knowledge, which can only be given by well thought out papers, printed in a clear and legible and interesting way. We are all busy men, and how in the world we are going to sit down and write down all this information I do not know. There is a Frenchman who lives north-west of Edmonton, and he has written me a most tremendous lot of questions about trees; he has also written to Prof. Brodrick and Mr. Buchanan, and to a lot of us. He got something from us worth having.

We hope to urge upon the Legislature the importance of giving us a grant. What do they do in Minnesota? They actually give $8,000 a year for the forwarding of their Horticultural society. A great many of us belong to that society. We know what we are talking about; we are not talking rumor; it is fact. They get $8,000 for establishing experimental stations, distributing literature, etc. You know there are certain conditions surrounding our horticulture which we alone can give, and we are handicapped because we have only $200 a year given us by the Government. We have drawn up a programme and we intend asking them to give us not less than $2,000.

Another point is this, that we think that, being a provincial association, we ought to be able to associate with all the other sister societies. We are here for the particular interest of horticulture; not here for any petty things for our own interests. In fact, we are more disposed to hand out some money ourselves to back our schemes than to ask for any for ourselves, and so we think it far better that all work hand in hand for the object of furthering the horticulture and forestry of this Province. We have no intention of competing with anyone. We would like to do the most modern and the most practicable experiments. I would like to see a further addition made to our directorate of the greatest importance. I am one of those radical people who like to see women introduced into all reasonable affairs of life. I would like to see some ladies put on our board of directors.

THE LAWN.

By Rev. Dr. Baird.

Mr. Chairman, ladies and gentlemen:—It won't take me long to tell you what my address is to be about. It is about "The Lawn." In the first place, a word or two about the importance of it, and the necessity of the lawn as an environment for the house and as a background and environment for flower beds and perennial flowers and other shrubbery. You noticed, perhaps, in the course of the address given to us this afternoon, how much the surroundings meant in setting off and showing to advantage the flowers and shrubbery of every kind. Miss Juniper pointed out, you will remember, how the table cloth, the centre piece, the vase in which the flowers were placed, had a great deal to do with showing flowers to the best advantage; and our president himself, in those beautiful views which he gave us on perennial plants, pointed out how much the appearance of the bloom depended on the surroundings in which they were placed. There are certain plants that ought to be planted in rows and certain others as a background.

The message I have for you is that the lawn is very important as the enviroment; it is the surroundings, the background in which the house, the home, and, on the other hand, the flowers and shrubbery, should be set. It is very desirable that the lawn should show a considerable expanse, and even if the total area of it be very limited, even if it be of necessity confined to the limits of a single city lot, it is possible, by the way in which it is arranged, and especially by the way in which the house is set, to give this effect. Such trees as are on the lot, and such shrubbery as there may be, should be arranged in such a way as to give as much of a vista as possibly. It it not possible for the man with a house on a fifty foot lot to show as charming a vista as the man who has a big place out in Crescentwood, or, better still, a place in the country, but a good deal can be done. Do not put your flowers down in the body of your lawn; do not plant your trees in groups or islands; do not plant your shrubbery in the midst of the lown; have it around the edge, so as to have at least the appearance of a considerable expanse, so that the lawn may look to the best possible advantage.

In the next place, about the preparations for and making of a lawn. We always begin every kind of story connected with horticulture by telling about the necessity of deep and thorough preparation of the ground. The ground should be deeply plowed or dug. If, as very often happens, the ground upon which the lawn is to be made consists, in a considerable measure, of excavations for the newly made house, you will have to take care that the white clay is buried deep and that the soil is of such a character that something can grow in it. Weeds will grow almost anywhere, but the soil should be of such a degree of fertility, at any rate, as will make it possible for something wholesome to grow on it. Not only that, but the surface should be especially

prepared. It is not enough that the ground should be level; it must be smooth. But if your lot has any natural declivity, it is very desirable, in a country, like ours, to take advantage of that natural slope of the ground and keep that character and that individuality, which will give to your lawn a character by itself among the lawns of your neighbors. The surface of your soil should be enriched by manure, which should be turned over and over, and any seeds in it should be allowed to germinate and be killed off, for they are one of the greatest enemies of the lawns.

There are three possible ways of making a lawn. It may be sodded; it may be started by grass roots, or it may be sowed. Sodding is always the quickest, but it is the most expensive, and it is not a very satisfactory way of starting a lawn. You are obliged to depend upon the kind of sod that can be got in your neighborhood, got, for instance, in the suburbs of the city, and by taking a little more pains about selection you can choose the kinds of grass you will have and secure the freshest and strongest growing, the most luxuriant kind of grass, the variety of grass that will be best suited to your ground. The second method is not practised in this country. Those of you who have had any experience in England know it is a somewhat common method of starting lawns. The grass roots are collected and these short sections are planted in the ground and nearly all of them form roots and grow up soon and form an excellent lawn. But for our purpose, altogether the best method is by sowing seed. The ground must be smooth and fine, and you must choose a day on which there is no wind. After you have sown the seed you must rake it over carefully with a fine tooth rake, and if possible roll it smooth. I will not tell you the kind of seed you must use, because ordinarily your best plan will be to take the advice of some reliable seedsman. He will give you an assortment of grasses. Have some early and strong growing varieties, and also some of those finer qualities of grasses which, however, are slower of growth, and which will form, by their later growing, strength, that thick net of grass which you would depend upon to make the body of your lawn.

In the matter of the care of a lawn much is to be said. It requires to be mown, and we should take advantage of the modern improvements in the way of machinery. Some of you will be surprised to learn that the whole business of having a lawn at all is a matter of almost the last generation. The lawn mower is of comparatively recent manufacture. And before that lawns had to depend upon the use of the scythe or the sickle to be kept in order, a most laborious and a comparatively ineffective method of treating them. I remember of seeing, in the city of Oxford, in England, a lawn alleged to have been 300 years old, and which all those years had been cared for by the aid of the scythe or sickle; it was a lawn that one never sees in this land, due, no doubt in part, to the care it had, and particularly to the moisture of the climate. But for us the case is comparatively simple, since we have the lawn mower, and the lawn mower frequently used is for us a considerable item in the care of the lawn. The grass which has been cut should, of course,

be carefully taken up and removed; it must not be allowed to lie upon the lawn in any quantities at all. The roller ought to be in use too, a garden roller of considerable weight, although I think that ordinarily we make the mistake of thinking the roller needs to be of too great weight. I know of a piece of ground in this city which was used for sporting purposes, and every spring the young men who use that lawn hired, at considerable expense, a road roller from the city; they have ruined their lawn, just because they have used upon it a roller intended for an entirely different purpose and two or three times too heavy. Their lawn would have been helped if they had used a lawn roller, a roller intended for that purpose, of reasonable weight, which, if used at the proper time, would have helped their lawn.

In the matter of fertilizers for a lawn, because, after all, the most of the fertilizing must be done after the lawn has been made, I would like to warn you against using fresh barnyard manure. Do not do that. You are sure to damage seriously your lawn by importing weed seeds. It is impossible to get fresh manure which is quite free from weed seeds in the cities, where we depend upon the manure provided from here and there. And the great enemy you will have to fight against is this one of noxious weeds. So as a fertilizer I would not recommend any kind of barn-yard manure; I would much rather direct you to the use of a commercial fertilizer. You can get it at any florists, and the professors in this college will recommend to you the kind most adapted to your land.

But even with the greatest of care, you are liable to be troubled with weeds. I confess that has been my hard experience. I started in with a lawn which I supposed had not a dozen dandelions; now we have dandelions by the millions. Several years ago I spent between $25 and $30 in one summer, paying a man to dig out those dandelions; next summer they were almost as bad or perhaps worse. It was my lot to build first on the street in which I lived and all around was unoccupied land — the vacant land flourished in dandelions. The seed blew over, caught in the grass on my lawn and every seed grew. So with all the pains I took to keep the weeds from going to seed my land is in a lamentable condition. My friend Mr. Birch, tells me that he has discovered some chemical which you sprinkle over the land that does not injure the grass, but is death to every dandelion. He tried this last summer with eminent success. This simply requires to be sprinkled over the lawn and it invariably picks out all the dandelions and leaves the grass alone. I am sure he will make a considerable amount of money out of it.

With respect to the further care of a lawn, watering is the next thing to be mentioned. I am satisfied there is far too much water put on lawns in cities and towns where there are available waterworks. Now and then, in dry summers, it is desirable that the lawn should be watered and when this is done, give it a good soaking. Do not water it in the morning; do not water it during the day — these are parts of the gospel with regard to the care of

lawns. Let the watering be rigidly reserved for the evening, and remember that, even in a comparatively dry climate like ours, there are far more lawns hurt by too much water than by too little. If you have a lawn well cared for, well made in the first place, with reasonable good soil underneath it; a land that is fertilized with a reasonable amount of intelligence and care, you will be surprised to learn how little it needs to keep it green all summer. I do not know that we will succeed in having lawns such as you are familiar with in England. You will notice how green they are when everything in this dry country is withered and yellow and sere. We will never have lawns like theirs perhaps, but we can have, by a good selection of grasses and by intelligent care, excellent lawns. So I would not discourage any of you who live in places where water is not available. Water is one of the least things in the care of a lawn of good quality.

And what a pleasure it is. Flowers are all very well, but flowers look very much better when they are sowed in a noble lawn. Trees and shrubs are beautiful; they are still more beautiful when around the edges of a lawn. So whatever you use your lawns for; whether if you are young and active, you use them for a lawn tennis court; whether, if older and lazier and fatter, you content yourselves with croquet: or if like those of us, who are still older and still fatter, like to sprawl out on the grass behind a shrub and let your grandchildren crawl over you, I recommend all of you to have a lawn.

Mr. Tribe:—I have been very observant about this question of lawns, trees and flower gardens. In the first place one of the great mistakes I see being made all over the city is that the majority of people are using the excavations from their houses and then expecting to get from that a substantial lawn. Well, ladies and gentlemen, I may tell you that you may go on until Doomsday and yau will never be able to make a good lawn out of that material. It would be money in your pocket, if you must use the excavation, to put it on the bottom and put good soil over it. I would like to make one suggestion in reference to water. If you could have a tank, where you could expose the water to the rays of the sun for twenty four hours before allowing it to go on your lawn, it would be an advantage. Another thing I have noticed through the city is that there are a large number of trees dying after a great deal of money has been spent in planting them. We do not wonder at it when we see what is constantly under our notice. If more money were spent in preparing the soil, and some of the natural soil were put with the trees, there would be more chance for success. Another point, I notice some are anxious to get something to look at in winter. I believe you would be wise to introduce more evergreens in and around your lawns. In doing so an important point, in my mind, would be to study out and find just what is the proper distance that trees should be planted.

THE FORESTS OF CANADA.

By Abraham Knechtel, Inspector Forest Reserves.

It would almost seem as if the white race had begun wrong on this continent. Needing cleared land for agriculture, we started in the woods; and now, when we need woods, we start on the cleared land. The arrangement was not an economic one. The prairie should have been located near the Atlantic and the woodland in the Northwest. Arranged as it was, with the forest on the land that was close to the market for its products, forest destruction was at first a necessity and later became a habit. Fire, the good servant in clearing the land, ran rampant, carrying forest devastion far beyond the necessities of the people.

The earliest settlers coming from Europe were used to forest conservation. They had practiced it in the countries from which they came. Forest destruction was to them a new thing; but the forests were so vast that they thought there never could be a scarity of wood, and they reasoned that the more forests was destroyed the more the agricultural interests of the country would be advanced. But the modern settler sees the forest in a different light, especially so in the great Northwest, where, on the wide prairie, wood is a luxury. To him, forest conservation is the necessity, not forest destruction. He has no delight in the devastation of the woods by fire, and he hails with hope, legislation and management tending to improve the condition of the forest. He sees clearly that his comfort and his agricultural interests are closely dependent upon a plentiful supply of wood.

The country is so vast, and the demand for wood so great, that it is a tremendous problem to so manage the forests that this demand may be met continously. Hope seems to lie in the creation of forest reserves, and the policy of setting aside lands to be used as forest reserves is now pretty well established by the Dominion Government.

The Dominion forest reserves are intended to preserve and produce a perpetual supply of timber for the people of the prairie, the homesteaders' needs being considered of first importance. They are not intended to furnish wood for the lumber trade. Hence, the policy of the reserves is favorable to small mills, rather than to large ones, which need large tracts of forest and manufacture lumber beyond the needs of the settlers.

The Forest Primeval.

Three centuries ago a vast wilderness of tall timber covered the eastern provinces of Canada. There still stands, here and there, a lofty pine, or giant oak, attesting the grandeur of that ancient forest. All the swamps were green with cedars and fir trees; all the valleys were full of hardwood

and the hills were covered with pine, spruce and hemlock. It seemed as if there was wood enough to last forever. There was too much of it; it was in the way; it encumbered the fertile soil. There was wood to burn, and the burning of it became the chief occupation of the people. Now, wasn't it a burning shame to destroy the beautiful forest? Not at all. To clear the land and make it ready for the farmer was a stern necessity. It was a heroic task, and it was ardently accomplished. But we have gone on clearing the land until we begin to have grave concern regarding the future supply of wood. The forest has been removed, not only from the fertile soil, but also from land that never was and never will be good agricultural land. There are elevations where the climate is too severe for farm crops, hills too steep or stoney, and other land too sterile. It would be well for us to consider if such land had not better be perpetually devoted to forests.

Purposes Forests Subserve.

Let us consider the purposes that forests subserve. In the first place, we need them to supply us with wood. And wood we must have to keep us warm; to cook our food; to build and furnish our houses; to erect our telegraph and telephone lines; to mine our metals and our coal, which takes no small amount of wood; to supply us with paper, charcoal, tanbark, dynamite, boxes, pails, matches and many innumerable articles. On going from a forested country to prairie one realizes the importance, convenience and cheapness of wood to a home. to be sure coal and gas may be used for fuel and brick, stone, cement and iron for buildings, but wood is still largely used for such purposes, even in places where it must all be imported and is very high in price. Even in Venice, Italy, I saw in the canals barges laden with wood, and I was astonished at the quantity of wood used for other purposes. The poor people wear wooden shoes; wooden tables, chairs, baskets and boxes are common, and the houses have wooden floors and doors. In the ducal palace the doors of a room, called "the Sala Delgi Armi", are of cedar of Lebanon. Along the canals there are platforms made of wood, and many timbers stand with one end in the water. When the plans and specifications for Palace Romani were being prepared it was found that the site selected was not firm enough to support the building, and so 6000 larch trunks were sunk in the mud. In Italy, the use of wood is reduced to the minimum, and yet the country finds it necessary to import 25,000,000 cubic feet annually, although she, herself, produces 245,000,000 cubic feet. Italy has suffered severly from lack of wood, but now forest extension is receiving much support from the government.

Forest regulates Streams.

Then, we need forests to give an even flow of water in the streams. The snow in the woods, protected in the early spring from the warm winds and the sun, melts more slowly than in the open field. And after is is melted,

and even throughtout the entire year, whenever the rain falls, the trees offer a mechanical resistance to the flow of water into the streams. Besides, the roots of trees penetrate deep into the soil, and when they decay they leave channels, which conduct into the earth the water that later flows in cool springs from the hillsides. Going into the woods in autnm one can, in many places, wade knee-deep among the fallen dry leaves and twigs. If these are kicked away there will be seen a more compact layer of the same material partly decayed. Then, again, below this is a mass of black mold in which traces of organic structure are hardly discoverable. Now, this is humus. Of all soil materials, or of vegetable materials, humus has the greatest power to absorb and retain water. If you take sand, containing 2¼ per cent vegetable matter, and mix with it 1 per cent as much humus, its capacity to take up water will be more than doubled, and its power to resist evaporation will be increased fifteenfold. This material, then, spred over the forest floor forms a mulch which is a great conserver of water. Then, in the forest are many small basins formed by the roots of trees. These catch the water and hold it from running off. They are permanent while the forest remains, but when the trees are cut away the roots decay, the borders of these basins are broken down, and the water runs immediately into the streams. Hence, you see, the forest holds back the water which soaks into the ground, and which keeps coming all summer from the hillsides, and so the streams are kept supplied.

The open field is not so protected. The snow there, exposed through the winter to the evaporating influences of the sun and the wind, is a thinner covering than is afforded to the forest, and is, in many places, entirely blown away, so that the ground frezees to a great depth. The water held above the hard ground collects in the depressions and there frezees to solid ice. Then, when the general break-up occurs in the spring, since there are no hindrances to the flow, the water is carried rapidly over the surface into the streams. The rivers become torrents. The hydrostatic pressure beneath the ice breaks it into huge blocks which are sometimes carried down the stream with a velocity that destroys bridges, and, not infrequently, breaking over the confines of the river, large portions of villages and cities are laid in ruin; or, collecting into an ice-jam, it causes the water above it to rise high into the homes of the neighbourhood, causing great hardship and suffering. It is not uncommon, in the spring of the year, to see in the cities along the St. Lawrence the people wading knee-deep in the water in the streets, or going to and from their homes in row boats.

In 1854 my parents settled in Huron County, Ontario. There were only two houses in my native village when they reached it. The county was covered with a dense forest. The Maitland River flows along one side of the farm my father cleared. A sawmill was erected a short distance below the farm and a boom was stretched across the river from one of the fields to hold back the logs until they were needed at the mill. In the mid-summer the boys of

the village used to come to that boom and dive from it into deep water. Many a time I used it as a bridge to bring home cows that had swum, rolling and puffing, across the stream in search of fatter pastures. Below the falls there flowed, all summer from the rocks in the river bank, a spring of ice-cold water. I used to lie down beside that spring, put my face into the water and drink my fill. I thought then, boy like, that the stream would flow on forever, and wished that I could forever drink its pure cold water. Several years ago, in mid-summer I visited my native village to see the river and the spring the objects of my greatest interest. But I was disappointed. Where I had learned to swim I could walk across the river dry-shod, on the stones that formed its bed, and the spring was a mere trickle from the crevice of the rocks where the waters had gushed forth so copiously. I was told that in the spring the river now becomes a raging torrent, and that the bridge had been recently torn from its foundations. No logs now float down the stream. The forest that furnished the logs, that prevented floods in the spring and that kept the stream alive in the summer, have long been cut away.

In a rocky nook in the Apennines, three fountains united and formed a stream of living water. Ancient beeches that bordered the stream and surrounded it were cut away, and the stream became a mere thread of water in rainy seasons. The beeches were replaced by firs, and as these gradually grew the stream gradually returned to its former abundance and quality.

They save the soil.

Then we need forest to prevent the erosion of the soil. The color of the streams after a heavy rain gives evidence that the fertile soils are being rapidly washed away. There is soil enough brought down the Mississippi River each year to cover a square mile built up to the height of 360 feet. McGee, in speaking of the bad lands of the State of Mississippi, says: "The sandy soil of the hills, no longer protected by the forest foliage, no longer bound by the forest roots, is carried into the valleys to bury the fields, to invade the roadways, and to convert the formerly rich bottom lands into treacherous quicksands when wet, into blistering deserts when dry. Hundreds of thousands of acres have thus been destroyed since the gullying of the hills began, a quarter of a century ago."

On a tour which I made through Europe, studying and photographing the forest, I noticed that the hills of Germany being covered with trees are but very little eroded. Those of Italy are mostly denuded, and have their sides worn into deep gullies, the soil being periodically washed and carried away by melting snow and summer storms.

A break to the wind.

The forests are needed, also, as a break to the wind. In many parts of Ontario, especially in Norfolk, Durham, Simcoe and Prince Edward Counties, the soil is a light sand. The fine pine forest that once covered these counties has been entirely removed. Scarcely a vestige of it remains, and now the wind, unbroken by the trees, sweeps over the fields, lifts the planted grain from the fields, or buries the growing crops until agriculture is next to impossible. These counties should be re-forested. In many parts of the North West territories, too, the soil is either a light sand or a loose clay that is carried by the wind as if it were light snow. To prevent this drifting of the soil, which is a serious hindrance to agriculture, the farmers of the west are now planting shelter belts in many places. The Dominion Government has already sent out from Indian Head eleven million trees, free of charge, for this purpose.

For health and rest.

Then, forests are needed for health, rest and recreation, and to protect the game and the fish. For their sanitary value, we have to look only to the woods of Ontario and Quebec, which furnished last summer a place of rest and recreation for 100,000 persons from our over-crowded towns and cities, besides bringing in from the States and foreign countries 70,000 guests, who alone left here over $10,000,000 in return for the benefits they derived from our forests, lakes and streams. Considering the financial side of the question however, the income we derive from our forests, on account of their sanitary influence, does not all appear in the money that the stranger leaves with us. We must also consider the money of our own people that we keep at home which, without our forests, would go to Maine, New Hampshire, Colorado or the Alps of Switzerland. But the sanitary benefits to our own people are not to be computed in dollars and cents. The fact that the air remains pure and that the odors from the evergreens, the inspiring scenery from the hills, and the charm of the lakes and streams, give life, health and peace is sufficient to warrant the existence of forests. The health reports show that there are fifty thousand persons in our country suffering from tuberculosis. It has been held by many eminent medical authorities that the atmosphere of evergreen woods carrying, as it does, vapors from the gums of the pine, spruce and balsam, has a curative effect in pulmonary diseases. Dr. E. L. Trudeau, who has charge of the cottage sanitarium at Saranac Lake village, in the Adirondack Mountains, New York, told me that of 1,300 patients admitted during twelve years, but 23 per cent died in the sanitarium.

The Aesthetic value.

The aesthetic value the forest has for the country one learns to appreciate in travelling over it. The trees, with their variety of form and richness

of coloring, clothing the hills and bordering the lakes and streams, lend a peculiar grace and loveliness to the landscape.

We have given some of the reasons why forests should be preserved. They furnish wood, feed springs, prevent floods, hinder erosion, shelter from the winds, give health and recreation, protect the game and the fish and give the country aesthetic features. How then, can the forest best be preserved?

How to preserve forests.

To protect them from fire is the first law. In our forests, where old rotten logs lie everywhere on the ground, and where the lumberman leaves the tops of trees and gathers the brush into heaps, as if getting the woods ready for burning, the question is difficult. In Europe, where the brush is all utilized, and where even the stumps are taken out of the ground for fuel, the problem is comparatively simple. The Forestry Department of Canada keep constantly in the woods a large force of fire rangers, whose duty it is to prevent and extingish forest fires. They prevent fires by posting along roads, trails and streams, and around lakes and ponds, cloth notices which state the law in regard to fires. They also call upon the farmers and caution them in regard to burning fallows, logs, stumps, brush, straw and dry grass in violating of the law which prohibits such burning in the summer months. Then these fire rangers extingish fires that start in the woods. They warn out the farmers, who are obliged by law to obey the summons and direct them in fighting the fire. Many people are of the opinion that when a fire gets started only the good Lord can stop its ravages. I believe in prayer, but, when a fire is raging in the forest, I have also great faith in fighting. I have seen in the evening a fire burning in the forest with a fury almost apalling feed by dry bushy tops and old dry, rotten logs; tongues of flame slapped the sides of old stubs and streamed from their tops; the fire roared with a high wind, and left the green trees black and devoid of foliage. But the next morning not a flame was to be seen, only smoke arising here and there from the blackened logs, ground and trees. A dozen determined men had been there, and had brought the wild fury under complete control, and neither earth nor sky had given a drop of water, not even a dew, and the west wind lent its best aid to the flames. Yet, notwithstanding the brave work of the fire rangers, there was burned over last year in the Dominion, an acreage of 300,000 square miles of timber, entailing a loss of $800,000, and a cost of fighting fire of $70,000.

We believe it to be treating the forest rationally to take out the timber that is burned. The fire does not burn the trees to ashes, as many people suppose. Some few rotten ones may thus be consumed, but the forest is mostly left standing, the trees dead and blackened. Timber taken out during the following winter makes good lumber, but if it is left till the second winter it is much worm-eaten. We must not conclude, however, that there is no loss. There is deplorable loss. I look upon the forest as a great chemical

factory, taking soil, air and water, and combining them into wood for the use of the people. Fire comes along; the factory is burned; the wood production ceases, and the people must go without. If only the mature trees were burned, the loss would not be great, for these should be removed and put to use. The production of wood takes place chiefly in the younger trees, from six to ten inches in diameter. These, to be sure, when killed by fire are marketable, but there is an end put to their function as wood producers.

Forest restoration.

There is a common notion that the forest will restore itself, and that valuable species of trees will again cover the burned waste. Such hope is in most cases vain. Poplar and white birch will, no doubt, cover the ground and, in the eastern provinces, the maple, the yellow birch and the beach may, in a long time, work in among them. Even the balsam may in time show itself thick among the hardwoods, but the hope that the pine, the spruce and the hemlock will, by natural seeding, sufficiently cover the ground is, in most cases, a poetic dream. The white pine that has been taken by the lumbermen from Ontario, Quebec and the Eastern States has not been restored. That valuable species, speaking from a commercial standpoint, is gone from the hills, and the spruce and the hemlock will in a short time disappear also.

In our forests the hardwoods have great advantages over the evergreens. They seed more often. The seeds germinate and grow freely everywhere, while the evergreens require good mineral soil. The hardwood are more resistent to fire, and do not need such good light conditions for their growth. But the greatest advantage they have is that they sprout from the root. If you cut down a pine, a spruce, a hemlock or a balsam, to get a tree in its place one must come from the seed. But if you cut down a maple, a beech, a birch, a basswood, or almost any hardwood tree, many may come from the root. So the forest will restore itself with hardwoods, but not very well with the more valuable conifers. These, to be sure, do reproduce themselves in certain places, and on certain soils. But if one observes carefully the conclusion is forced upon him that the reproduction of the conifers is not going on with sufficient rapidity to furnish the people of the country their wood.

Forest planting.

Sooner or later we will be compelled to largely supplement the natural reproduction of the conifers by planting, and, indeed, the Forestry Branch has already begun thus to provide for the future. It may be interesting to some of you to know how the forest is planted. Cones are collected from the tops of the trees about the middle of September. Each cone contains many seeds, two above each scale if the cone is a good one. These cones, or burrs,

as they are called by the lumberman, are taken to a dry, airy room and spread out on the floor or on the shelves. In about three or four weeks the scales loosen and open. The seed is threshed out with a flail and put through a fanning mill to clean it. Early in the spring ground is prepared in about the same way as for a vegetable garden. Beds are made, and the seed is sown thickly, broadcast over the surface, and covered very lightly with sand. Screens are then placed over the beds to keep out the birds and to shade somewhat from the sun. In about two weeks the seeds germinate, and soon the beds become green with the little trees unfolded to the air and the sunshine. The trees are left in these seed beds for two years, and are then transplanted into other beds in the nursery, where they are left for one or two years more. They will then be about nine inches or one foot high, and are taken to the field and set out five feet apart each away. They are thus close, so that they will soon crowd each other, lose their lower branches and make timber free of knots.

In twenty years the planted forest needs to be thinned. More than half the stock must be removed. In these thinnings it is always the poorest trees that are taken, all the dead, diseased and crooked being removed. A thinning must be made every ten years after the first one. The last trees left on the ground remain until they are from eighty to one hundred years old. That, to be sure, is a long time in the life of a man, but in the life of the state it stands close to zero. It is a long time to wait for a crop, but when the crop does come there should stand on every acre from forty thousand to fifty thousand feet of merchantable timber. The best forest we have in the eastern provinces will hardly cut more than twenty thousand feet per acre, but a planted forest in Germany is not considered a good one unless it yields forty thousand feet as a final cut, to say nothing of the thinnings which often amount to thirty thousand feet.

The forester's work.

The forest cannot be properly managed without the cutting of trees. Like the farmer, the forester has his seed time and his harvest. Agriculture produces food crops, forest wood crops. The lumberman harvests the natural wood crop which nature has taken about two hundred years to produce; the forester harvests an artificial one which takes him about eighty years to produce. The lumberman takes in his harvest everything from which he can make present profit. The forester leaves the smaller trees in the forest to grow into future values. It is of no concern to the lumberman — that is if he be a lumberman and nothing more — if falling timbers crush little trees, or skidding tears them out by the roots. They offer no present profit, and he looks upon them as worthless. The forester sees in these young trees his future harvest, and gives them his most earnest care. The lumberman's path has been full of fire. In many places he has been followed by flaming forests and dense clouds of smoke, but in the forester's tracks the green trees grow, forests again flourish on the denuded wastes and shed upon the country their benign influences.

SCHOOL GARDENS.

Friday morning, Feb. 17th, 1911.

Mr. Norman M. Ross in the chair.

Paper by Mr. W. J. Sisler, on "School Gardens", read by Mr. Law.

The value in actual cash of all that a child can grow in his small garden is not very great, though it is not to be lost sight of. There are thousands of backyards in the cities or waste places about the farm that might be made to produce five or ten dollars worth of seasonable food. Two of our boys have grown all the potatoes required for a family of five, as well as some corn and cabbage. A boy and his sister did the same on a small plot of newly broken prairie adjoining their house. All this has home economic value, and it trains children in habits of experiment and careful thought that will tend to make them more successful in their life work. But it has a value far greater than this. When a child grows a bushel of potatoes or a hill of corn he is dealing with elemental things. He is working with nature to produce something that did not previously exist, and he begins to realize that food, clothing and shelter require work on the part of some one to produce them. If a child sees the baker, the butcher and the grocer bring the household necessities, without himself being required to do work of any kind, how can he learn the fundamental economic law, "nothing without labor". I believe that failure to understand this is responsible for most, if not all of the dishonesty in business and political life to-day. Economic training involves four factors, namely, how to earn, how to save, how to spend and how to give. The way to learn these things is by actually doing them. By far the most common crime among children is stealing, which simply means a failure on the part of the child to understand the rights of property. When he produces by his own skill and labor he will realize that he has some inherent right in the article produced, and that others have similar rights to what they produce. Manual work of some kind is the greatest preventive of juvenile crime, and no form of such work is so suitable for little children as gardening. Even if they add a very little to the family table they are learning at the right time something of the duties and responsibilities of life. Let us now consider briefly the practical side of the question and actual methods of work. This work was started at the Strathcona school five years ago, and has been tried on the following lines: (1) The window garden and experiments in the schoolroom; (2) The outdoor school garden, and (3) The home gardens made and cared for by the school children. While the main part of the work should be done out of doors, many interesting experiments can be conducted in the school room and the knowledge can be later applied to outdoor work. For example, test the germinating power of various seeds. The first consideration is to get suitable soil. A mixture of two parts each of well rotted sods and manure and one part sand may be used, sifted and well mixed. If this cannot be had, take good loam from a

garden or a cultivated field. Plant a given number of grains of wheat or other grain under favorable conditions and note the time required for germination and their subsequent rate of growth. Take the same number of grains, soak them in solutions of bluestone or formalin of various strengths, and determine what strengths will destroy or greatly lessen their germinating power. Plant grains at various depths and note at what depth they grow best and at what depth they fail to grow. Plant half a dozen beans in sand and another half dozen in clay and note the difference in growth. Plant two lots of beans or corn in good loam, giving both exactly the same attention, excepting that one lot is in the sun and the other in a dark place; after growth has proceeded for three or four weeks note the difference and reverse the positions, taking the one from the dark to the sunlight, and vice versa. This gives a very striking illustration of the effect of sunlight on plants.

Many interesting experiments may be carried out with soils. Take some bottles, cut off the bottoms, tie cheesecloth over the tops, invert them and fill two-thirds full of sand, clay and loam. Place the necks of the bottles each in a tumbler of water and test the capillarity of each kind of soil. In a similar way, by pouring water on the soil, their moisture-holding capacity may be tested. Take two shallow tins of equal size and place in them equal quantities of the same kind of soil. Saturate them with water, being sure that the same quantity is used for each. After the top soil has dried away a little, stir the surface of the one, making a fine coating to the depth of say half an inch. Repeat this frequently and compare the weight of each every two or three days. It will be found that the soil that was not stirred on the surface has lost moisture more rapidly. The same thing may be demonstrated in the garden, but of course results must be judged by the crop produced. Here we have the whole secret of "dry farming" demonstrated, namely, deep plowing, then constant surface cultivation to make a dust blanket or mulch to conserve the moisture. In Manitoba we seldom have too much rain, and often we have too little. If the teachers throughout this Province could demonstrate the value of surface cultivation they could not fail to interest the farmers, and in a dry season a very material increase could be made in the grain crop.

What should be the line of work out of doors? First, I should say to beautify the grounds by planting trees, shrubs and flowers, and, second, to conduct such experiments in the school garden as have an educational value and a practical bearing upon the life of the community. The average school ground in Manitoba is, to say the least, not a thing of beauty. A row of trees and a few flowers, together with a general cleaning up of the premises, would make a marvellous change. The best tree for general purposes is undoubtedly the elm. The basswood and the green ash are also good. Give a lesson on tree planting and follow it up by allowing the older boys to put into practice what has been taught. Keep a record, giving date of planting, size of tree and its position, with names of children who did the planting,

and in after years they will be able to point with pride to a practical result of their work.

In the flower garden there is no need for many varieties. An excellent showing may be made with nasturtiums alone. The pansy will bloom within ten weeks of planting the seed. By planting in the fall and protecting with a light covering during winter they will flower very soon after the snow is gone. Some of our wild flowers, such as the orchids and columbine, may be transplanted and, in addition to their beauty, they will serve to demonstrate how wild varieties become domesticated.

While in every garden there should be shrubs and flowers, I believe that the vegetable garden is equally interesting and capable of practical results that will appeal to both parents and children. Select a corner or strip of the school ground which can be separated from the general playground, or get the use of a plot near the school. It should be well fenced, as there is nothing quite so disappointing to children as to see the results of their labor destroyed by dogs or stray cattle. If the ground has never been broken you have an opportunity for experimenting with a first year crop on breaking. Try planting small plots of wheat, oats, flax and potatoes, and note the results. After the soil has been worked finely, lay out the garden into plots, varying in size from thirty square feet, if the space is limited, to ten times as much if you have plenty of room. Vary the size according to the capabilities of the children. Boys twelve years of age will work a plot thirty feet square without getting tired of it. Younger children should of course be given much less, and experiments can be conducted very well on small plots. Have one section of your garden for a model kitchen garden, another for experiments with field crops, and the remainder for children's individual gardens. In your kitchen garden, grow all the common vegetables, excepting such as peas, carrots and turnips. One of the difficulties you will find is that vegetables will be destroyed or stolen during the holidays, not by the school children, but by their elders outside of the school. If vegetables that may be eaten raw are planted unnecessary temptations are being put in their way.

Children should keep some record of the work done in their gardens, time of planting, notes on growth, amount of rain, quantity and value of produce, etc. They should also study the insect pests and means for destroying them. The life history of the cabbage butterfly is equally interesting with that of the silk-worm, will be much better remembered and of more practical use. A toad in the school room is out of place, but in the garden where he may be seen destroying the gardener's enemies, he becomes a centre of intelligent interest rather than of curiosity. Birds and insects are best studied in their natural surroundings where their relations to each other and to plant life may be noted. Experimental plots should be planned so that work will bear closely upon the interests of the community. For example,

sow wheat at the earliest possible date and other equal plots at intervals of one or two weeks. Try growing clover, millet, corn, alfalfa. With the scarcity of hay, such crops may be grown to take its place as winter food for farm stock. Some of the results of our experiments at the Strathcona School during the past three years are as follows:

1. Potatoes cut to two eyes yielded almost exactly the same as those cut to three eyes; but the former were quite uniform in size, while the latter were uneven, many being too small for use;

2. Crop from seed ends of potato was much less than that grown from other parts of the potato used as seed;

3. Cauliflower transplanted in dry soil and then watered showed 28 per cent of failures; the same sort of plants set in soil that was well soaked before planting gave only 3 per cent of failures;

4. In 1908 pop-corn failed to mature; in the following year one of the boys succeeded in ripening it;

5. Cauliflowers transplanted when one and a quarter inches high matured earlier than those that were allowed to grow to three and a half inches before transplanting; the progress of the small plants was slower for the first two or three weeks, but after this they rapidly gained on the older plants.

Any number of experiments, easily understood by children and of practical value to the farmer and gardener, may be devised, but no child should try too many in any one year. One experiment, carefully noted, will be better than a dozen carelessly done. Children should work the experimental plots and the model kitchen garden under the immediate supervision of the teacher, while in their individual plots they may choose, within limits, what they shall plant. It is not advisable to have too many varieties in one small bed, or to have flowers and vegetables in the same bed.

Tt Strathcona school we have for the past three years given prizes for the best home gardens made by the children. Gardens were visited twice during the summer, and those scoring the highest number of points were awarded prizes. Three years ago cash prizes were given, and for the last two years framed pictures and books have been the most satisfactory, in the first place, because the children prefer them, and a good picture is something that they will look upon with pride and pleasure later in life.

Even if you cannot have a school garden, encourage the home garden idea and hold an exhibition at the school some time in September. The exhibition can be made the most enjoyable and profitable day of the whole year: Let every child bring a bouquet or plant, as well as the produce of his home or school garden. Collections of weeds and insects may be added, and girls will be pleased to show their skill in sewing, knitting, and possibly

baking. Invite the parents and have the school open during the evening, so that friends busy during the day may have an opportunity to come. No better means could be found for getting parents interested in the school.

There are difficulties in the way of carrying on this work, as want of proper fences and lack of initiative on the part of the teacher who has an interest for a very short time in the school. If all teachers would take up the work and keep a permanent record of all experiments it would not be difficult for a new teacher to go on with work of previous years. If bulletins were issued by the Provincial Government, indicating lines of work for Manitoba schools, it would help to get the movement started.

We are on the eve of a great reform in the primary school, where teaching will be made more practical and related to the child's immediate interests. This new education will be demonstrated most successfully in the intermediate and consolidated school. These schools should have not only a playground and a flower garden, but five or ten acres for experimental plots, so conducted as to be of practical value to the surounding community — a miniature experimental farm, in fact.

The best school in the world is the school of experience. Men and women are independent and self-reliant in proportion to what they can do and what they have. The academic school asks, "What do you know?" The question that life asks is, "What can you do?" A man's success or failure depends on his answer to the latter question. A wholesome amount of work lies at the very foundation of things, and the independent earning of one's living is a worthy ambition for every boy and girl. Intelligent work, understanding things around him, besides being more productive economically, adds to the pleasure of life, both for the individual and the community. The best place for a child to perform the functions of change and growth is in an environment that itself changes and grows. Nature alone can furnish this. Earth, air and sky furnish the best raw materials for a child's education. Let him work in nature's own laboratory.

Mr. Watson — Those of you who have heard the paper prepared by Mr. Sisler will have some idea of the work that some of the teachers are trying to do, and that some of the teachers are actually accomplishing in the work of horticulture in the schools. I hope to win your sympathy by stating that, although a teacher, I am fully in sympathy with horticulture and agriculture. My early days were spent on the farm; I remained there until I was taking the part of a man on the farm, and since coming to the West I have spent two summers in the harvest fields and two other summers in agricultural colleges. I often wish that I had taken my course in the agricultural college rather than in the college I did.

A series of lantern slides were here shown and explained.

"HOW THE SOCIETY MAY ASSIST SCHOOL GARDENS."

By Mr. H. W. Watson.

Mr. Creelman, of the Ontario Agricultural College, adressing a meeting of farmers a short time ago, is reported to have said: "The curse of city life is its congestion; that of the country life is isolation and monotony". Now, if that is true of Eastern Canada, the latter should certainly be more true of Manitoba and Saskatchewan. You, as horticulturists and agriculturists, know how true that is, and it is not necessary for me to take time to convince a horticultural audience, who are perhaps the most practical men in our Province. There is a continual exodus, we all know, from the country to the city, and it is always invariably the very best sons and daughters that the country loses — the most ambitious ones that the country loses. Now, Manitoba and Saskatchewan want the very best at home. We are an entirely agricultural and horticultural province. The country needs its best sons and daughters at home. Now, how can they be kept at home? How can this yearly exodus be arrested? I believe that we can only hope for permanent success in the proper education of the rising generation. We may do something with those who are growing up, but the school children who are entering school now are the material upon which we must work. I was very much pleased to read an account of Mr. Creelman's address the other day where he advocated a reformation in the educational curriculum of the country schools. He advocated tearing down the one-story bare walls of the country school. There, I believe, is the greatest remedy for this continual flow from the country of its best material to the city. We should introduce features into the school curriculum that will create an appreciation and fondness for rural life. In other words, we must reform our educational plant. There are two chief ways in which it may be reformed, by indoor art and by out-door art. Introduce into the school room some things, some conveniences, that city children enjoy, in the way of art hanging around the wall, school libraries, pictures manual training in its various branches, wood carving, carving for the younger children, sewing, household science. All these may be introduced in a simple way. Interest the children, give them something that will take the place of playing around home, chasing the chickens or playing with the dog. Adapt the country schools better to the needs of a country child. Introduce more of the variety, the embellishments and the enrichment that city schools possess. In other words, improve the educational plant. Now then, although that which is proposed is great, there is much that the parents may do, and, although I am not speaking to many parents, yet perhaps to many prospective parents, and there are many ways in which you can keep your boys and girls interested in the farm. One way is providing better roads, driving horses and automobiles. Now, perhaps, you think automobiles and blood horses are a luxury, but I tell you they are no more a luxury to your boys and girls than at home when we got

our first span of horses after having oxen, and they were only general purpose horses at that, and we thought we were all right in our first open democrat. Your boys will not enjoy one bit more driving in an automobile. And you have a right to provide them something in accordance with the age in which they live. Encourage telephones, electric railways from town to town; establish community clubs in your midst. The boys read in the papers about the snow shoeing clubs in the city, etc. Is it any wonder they want to come into the city instead of remaining at home night after night with very little to interest them. These are some things parents must do to prevent this disaster in an agricultural country.

To come more particularly to the point in hand, the improving of the educational plant, one of the chief ways is outdoor art. In other ways, the improving of the school grounds. Establish a school garden in connection with the school for the summer; for winter, you might have wood carving, carpentering, etc., for the boys, and for the girls sewing or cooking could be established in any country school if only the equipment is supplied. Now then, it is of no use for me to take time to convince horticulturists of the great advantages of gardening to our boys and girls, but perhaps I might throw out a few hints as to how you may help. I try to look at this subject from the point of a horticulturist as well as a teacher, I believe that a provincial organisation such as this should have a branch organized in every town. It is impossible for this provincial organization to reach each town individually, unless you are represented by a horticultural society there, and I think it would be well to have some one go through the Province for the purpose of organizing a horticultural society. Then, in connection with each of those horticultural societies, I would advocate holding a flower show, a flower and vegetable show in the autumn, and especially encouraging the work of school children in these shows. Agricultural shows are not satisfactory for this purpose as they are held in the summer time. I do not know why, in this Province, they could not be held in September. I believe the farmers have sufficient time then to attend them. Then you can aid the teachers in the various country schools by supplying them with different materials. Many a teacher would be glad to get the material you throw over the fence as of no use. You can aid in the judging of school gardens and exhibits. Then, in connection with the horticultural societies, bulletins might be issued monthly. It might serve as a means of distributing seeds and plants. Publish monthly bulletins and general information regarding horticulture in our Province. You could also do much by organizing excursions to the horticultural and agricultural farms. Much can be done by showing the child what is being done. Then I think, in every school section, there might be a parents' association organized. We have a trustees' association, and they run everything. I think there should be co-operation of the parents with the children, its object being to enrich the mind and give pleasure to a country child. There are various ways of doing this, chief of which, in the summer, would be encouraging school ground decoration, the

school gardening idea, encouraging manual training, domestic science, sewing, and in the winter a community club, which should be a society centre for the whole community. I thank you very heartily for the kind attention you have given me.

Dr. Speechly:—We have a delegate from the horticultural society in Minnesota. You know it is the practice to send a delegate from this society to the Minnesota meetings, and it is also the practice for delegates from there to attend our meetings here. Our conditions in horticulture are very similar, and we learn much from each other by an interchange of this kind. Mr. Melgaard will now address you.

Mr. H. L. Melgaard, representative of the Minnesota Horticultural Society, spoke as follows:

Mr. Chairman, ladies and gentlemen:—Had I known I was expected to make a speech I do not believe I should have come. If there is anything I dislike to do it is to try to make a speech where the audience is composed of more than two or three. However, I am here, and I notice by your programme that I am expected to make a few remarks. I am glad to be with you, and on behalf of the Minnesota Horticultural Society I extend to you our heartiest greetings, and wish you unbounded success in the good work in which you are engaged.

Like our Minnesota Society you will be apt to meet with a great many disappointments for some years to come, but you should remember that perseverance accomplishes all things. New and hardier varieties of apples and plums will be discovered, and the time is not far distant when it will be generally admitted that horticulture is a success in Manitoba. Eighteen years ago no apples or plums were grown in our gardens; to-day I raise all I need for my own use, and I have enough for my friends and neighbors, and in addition sell quite a lot. There is hardly any difference between the soil and climate in Winnipeg and our State, and I am confident that you can succeed where I did. The main thing is to plant only the hardiest varieties, especially of apples, such as the Hibernal, Duchess, and Virginia Crab. Most of our native varieties of plums will undoubtedly prove hardy with you as well as with me. A farm without a garden and orchard is no home in the true sense of the word. Our children will never want to leave our farms and go to the large cities as long as we do our share to make the home surroundings pleasant. Nothing will make children so attached to a home place as a nice garden and orchard. If they go away temporarily they

will always have a longing to return to such a home. It is a great pleasure to me, and I have no doubt it is a great pleasure in being of service to someone else. In addition to planting trees for use in a mercantile way, we should do something in the way of planting trees for ornament and beauty. The compensation for this does not come in the way of dollars and cents, nor honor, but from the consciousness of duty well done.

"POTATO GROWING."

Address by Mr. S. R. Henderson.

Following up the discussion upon potato growing, which was so warmly entered into one year ago, there were many things mentioned then that must necessarily be repeated. The Success of potato growing depends upon a variety of conditions, like other agricultural products. The soil must be suitable — a rich loam preferred with twenty loads of manure added say every three years to each acre; the drainage must be good in order that no water be allowed to remain upon the land. Weather conditions also will vary the yield; during the past dry season potatoes have given over half a crop without sufficient rain to go to the roots of the plants all the season, but it required regular cultivation every week.

Selection of the seed is also an important factor in the return of your crop and more especially if conditions are unfavorable — that is either too dry or too much rain. A medium sized potato, smooth and uniform will upon the whole give best results. Potatoes should be kept as cool as possible, the temperature about thirty-four degrees. Some days before planting they should be brought to the light and made to sprout. Cuttings should be a good size and have no less than two eyes.

Time to plant for early varities, as soon as the land is in condition to work. For the general crop from May 15th to 24th. Plant soon after cutting. The land should be fall plowed and harromed in spring as in condition for the purpose of destroying weed seeds, starting fresh crop, and also to retain the moisture. Level cultivation seems to be more suitable in this district. The amount of seed per acre will vary from 15 to 20 bushels according to the distance of rows apart and also the distance of plants in the row. The distance apart of rows should be 30 to 36 inches and about 12 inches apart in rows. Harrow as often as necessary until plants are two or three inches high and from then on do not spare the cultivation until they have been moulded up, which some object to doing.

They should, if possible, be lifted when the weather is dry, for the work can be done cheaper and the potatoes will keep much better when put in dry or pitted in field as the case may be.

Producers, to some extent, will have to cater to the market of special customers, from which they can get special prices often from 10 to 15 cents above that of the market price.

I should not recommend growing more than two varieties. Get the best and stick to them, for it is not easy to keep them pure and mixed varieties of potatoes are not desirable. Growing potatoes for seed purposes could, I think, be made profitable, when we consider the enormous amount paid

each year to seed houses for this stock and a large proportion of which imported, why not raise them here, for they would make stronger and better seed and be already acclimatized.

We should have in Winnipeg one central market where the consumer could go and meet the producer, and do away to some extent with the middleman's profits. If such could be brought about it would be a great benefit to both producer and consumer and would result in the citizen getting a better class of goods and delivered in better condition and would result in a grading of all classes of vegetables as well as potatoes. At present the middleman will not pay more for good variety of pure potatoes than he will for a mixture.

Varieties generally grown, viz., late Puritan, Trueman, Dreer's, Standard, State of Maine, American Wonder (Holland variety), Wee, McGregor, early varieties, Ohio, Early Six Weeks, Bruce.

The cost of producing an acre of potatoes:

Plowing	$3.00
Harrowing	2.00
Planting	1.00
Cultivating	2.00
Hoeing	2.00
Paris Green	1.50
Spraying	1.50
Lifting	8.00
Marketing	6.00
	$27.00
Average yield — 121 Bushels at 50 cents is	$60.50
Seed, 15 bushels at 50c.	7.50
	$53.00
Profit per acre.	$26.00

Question:—Do you advise deep or shallow cultivation?

Mr. Henderson:—That is a matter for difference of opinion. Some would not hill up their potatoes at all. Some claim that in a dry season it is better to cultivate them all you can.

Question:—How strong do you make your solution of Paris green?

Mr. Henderson:—Well, I think it depends a good deal on how strong your potato bugs are; if they are bad, give them a strong dose. The quantity will vary. Some will use two pounds to a barrel of water and some will use three; but I think three is a pretty strong solution. I think two pounds is pretty nearly right.

"SUCCESS WITH CABBAGE AND CAULIFLOWER IN MANITOBA."

By Mr. F. C. Hack, St. Vital, Man.

Mr. Chairman, ladies and gentlemen:—The cabbage is a great subject and competes with the potato for pre-eminence in the market garden and on the farm — with such success in my opinion as to prove the better paying crop of the two. It may be said in a general way that a cabbage may be grown almost anywhere and anyhow and that it will thrive in any soil, all this is nearly true and proves that we have a wonderful plant to deal with, but it is too good a friend of man to be treated in this off-hand manner, as no plant gives greater return for liberal treatment.

The ground intended for cabbage should be liberally manured (there is little danger of putting too much on) and experience has shown us that it is always beneficial to prepare the land intended for the cabbage crop in the fall of the previous year. The seed of the early varieties should be sown in boxes in the house or greenhouse about six or eight weeks from the time needed to transplant to the open ground, the seed should be sown thinly (if sown thickly the plants are liable to damp off) and covered with not more than ¼ of an inch of fine soil, water rather sparingly and give abundant ventilation at all times so as to render the plants as hardy as possible, the object being to encourage a strong and sturdy growth rather than a rapid one. As soon as the plants have made their second pair of leaves and show plainly their third pair, they should be transplanted into shallow boxes about 2 or 2½ inches deep filled with soil a little richer than was used in the seed bed. The object in using shallow boxes is to encourage the plants to form a solid mass of roots instead of one long spindling root with very few side rootlets. These boxes are best placed side by side in a cool place. When transplanting comes they can be carried to the field in these boxes and transplanting comes they can be carried to the field in these boxes and it is an advantage to plant them out early in the spring although the weather may be damp and cold. At this season of the year they may not show any great increase in leaf growth, but the roots form rapidly and they are a great help in providing a vigorous growth later in the season, as a general thing the plants should be set out as soon as the soil is in good working order, not wet, for wet ground can only be worked at a loss, and it is important that they should be planted deep in the ground at this season ,for since the stem is the part most likely to be injured by hard frost, they should be set deep enough to bring the base of the leaves slightly below the surface of the ground. Special attention should be given to this point for it may mean the difference between success and failure with the early crop. If very severe weather is threatened it is a good plan to go round with a hoe and cover each plant with soil, for when covered in this manner they will stand 20 deg. of frost and come through unharmed even if left covered for several days, but when warm weather returns they

should be immediately uncovered. When I say that the plants will stand 20 deg. of frost when covered with soil, I take it for granted that the plants have been properly hardened. But if the plants have been forced in a warm greenhouse or frame and have not had sufficient ventilation, five degrees of frost will sometimes kill them, when the same plants properly hardened would stand fifteen degrees of frost without any protection whatever and come through unharmed.

After planting in the field no crop takes so kindly to hoeing and cultivation as the cabbage, in from a week to ten days after the planting is finished cultivation should begin, and good cultivation is the secret of success in cabbage growing on our heavy soil. We must not cultivate just to kill the weeds, but work the ground so thoroughly that the weeds cannot grow. Good results can also be obtained by sowing the seed of the main crop varieties in the field where the plants are to remain and for this purpose we use a hill dropping seeder set to drop from three to six seeds in each hill. After the plants are up we thin them to one plant in each hill. This method has the advantage of not requiring the transplanting of the plants during hot, dry weather, consequently they continue their growth unchecked, and mature in good time even in our short season. We have grown the following varieties with success by following this method. Henderson's Early Summer, Glory of Enkhuizen, Henderson's Success and Steele Briggs Kildonan, and I have no doubt that many other varieties could be grown in this way. The Danish Ballhead, however, is a trifle late, and should be sown as advised for early cabbage. But although this method has its good points it also has its disadvantages — for the plants covering as they do a large surface are more likely to be damaged by cutworms, droughts and weeds, than when in a seedbed where close attention can be given them.

For early cabbage we should invariably grow the Early Jersey Wakefield, which is I believe the best very early cabbage in cultivation, as well as being the hardiest.

If an early flat cabbage is desired, I would recommend Henderson's Early Spring, it being ready for market a few days later than the Wakefield, but ahead of all other flat cabbage that I have tried.

For private gardens I would advise growing the Early Winningstadt, a large conical cabbage which for tenderness and flavor has no superior. It is, however, considerably later than either the Wakefield or Early Spring. Early cabbage should be planted in rows twenty eight or thirty inches apart and the plants set sixtten inches apart in the row, which gives from ten thousand to twelve thousand plants per acre, which if sold at an average price of four cents each should be very profitable.

For main crop in this locality, I think that the Glory of Enkhuizen takes the lead, it is a large solid cabbage, almost round in shape and has the advantage of standing a long time in the field without splitting. Among the

Drumhead group, Early Summer, Kildonan and Succession all produce heavy crops here. The two last named varieties if grown on rich land and well cultivated will easily average from 10 to 15 lbs. per head for the entire crop. These varieties should be planted in rows, 30 to 36 inches apart and the plants set from 18 to 20 inches apart in the rows, which gives from 8,000 to 10,000 plants per acre, which if well grown should be profitable at $12.00 per ton.

For winter storing the Danish Ballhead has no superior. The heads are of medium size and for solidity, they are not equalled by any other variety. When not larger than an apple they are as hard as a full grown head. For keeping these cabbage we have a roothouse built especially for that purpose, it has a false floor made of laths raised about four inches from the ground, and on this floor we stack the cabbage head downward and not more than three feet deep and keep the temperature as near freezing point as possible. If good heads are chosen and properly packed and this temperature maintained, cabbage can easily be kept till April with very little loss.

The culture that has been advised for cabbage is exactly the culture necessary for a crop of cauliflower, but the culture usually given the cabbage is not sufficient for the cauliflower, for cabbage will suffer with impunity an amount of neglect that would be fatal to cauliflower, which from the first must receive no check to its growth.

Cauliflower at its best is a very uncertain crop, more so than any other vegetable, it is impossible to state the proper time to sow the seeds and set out the plants to insure success. It, however, delights in a cool atmosphere and never does well when the season is hot and dry. And the young plants are not so hardy as the cabbage. Nevertheless it is best to set them out early in the spring so that they can get well rooted before the warm weather sets in or they are liable to button (that is, form small stunted flowers), or else fail entirely to head up. Cauliflower plants should always be set on the best soil at command. If planted on poor soil the result will be total failure. The grower cannot be too particular in selecting his seed for good seed is scarce and very expensive. All the best cauliflower seed furnished to the United States, Canada and other parts of the world comes from Denmark. What is still more strange the best seed is only produced in certain localities in this small country, in a few spots on the island Zealand the seed is grown, with great risk and at great cost, owing to the uncertain weather in this locality, which accounts for the high price charged for the genuine stock. In cauliflower more than any other vegetable it pays to buy the best seed obtainable and the best seed cannot be sold cheaply.

"GROWING GRAPES UNDER GLASS."

By Mr. Hogg.

Mr. Chairman, ladies and gentlemen:—My subject to-day is one I feel confident must have consideration from horticulturists, as from my observations for the past six years I never once have seen a first class bunch of grapes or anything approaching the standard of quality we were accustomed to see in the Old Country fruiterers or vineries. Our distinguished visitors from Britain and other European countries must be amused as well as disappointed at the quality of the grapes on our dinner tables, as they cannot be classed alongside of the beautiful fruit they are accustomed to see at home. I have seen lately baskets of grapes in some of our store windows that certainly were a great improvement on what we used to have, but still are a long way from the first-class article.

Now, gentlemen, why should this be? I cannot see any reason for delay. Our virgin soil of the prairie can be made to grow anything else, and I feel confident that it would also produce first-class grapes if only we try. Our climatic conditions are ideal, especially for white or amber colored fruit, as the sun is the great essential for finish and flavor for such varieties as Muscat of Alexandria, which yet has no equal for flavor and appearance when well grown. And for black varieties it would be easy to partially shade the glass to finish them up and keep the foliage. I feel confident that in a very few years quite a lot of our well-to-do citizens of Manitoba will have their own vinery and utilize the house in winter and spring for their budding plants, and I do feel sure that more real, delightful pleasure can be derived from a well-managed vinery than almost anything that comes under the category of Horticulture. At our leading Horticultural shows in Britain there are no exhibits which attract the same attention as the grape exhibits do, and no wonder, as we then can realize how grand and beautiful are the fruits of nature sent for the use of man, especially when conditions are made to get them to their best.

Ladies and gentlemen, I will try and be as brief as possible, with my remarks on propagation and cultivation. To begin with, there is nothing much easier rooted then the vine. Every eye will grow and by leaving three fourths of an inch of wood on either side of the eye to maintain it and placed in sharp sand and soil in a bottom heat of seventy degrees, it will very soon commence growing. The great secret of success is to keep them growing and encourage as many roots as possible the first year. I have seen them ten feet long and even as much as fifteen feet. The great thing is to have leaves and wood well matured in the fall so that they can be laid away in any corner where frost cannot hurt them; they can even stand a few degrees, in fact, they are generally less liable to damage by frost than the pots they are grown in.

How to make a vinery and border is something we have generally to be careful about. It is well to select an elevated piece of ground or a place that can be entirely drained as the vine abhors a wet, soggy hole and simply won't grow in it. The vinery must always command a southern exposure. I prefer an open roofed house, running north and south, so that the sun at noon shines equally on both sides, with ventilators on sides and ridges and the house so arranged so that the vine rod when its full size will be about twelve feet long with allowance for a leading growth each year. In the Old Country, the vines were usually fourteen inches from the glass; in this country I would allow a little more on account of keener spring frosts.

The old system of deep vine borders is practically finished, and we have realized that roots near the surface are the best ones, as they mature more easily, are more directly under the influence of the atmosphere and sun and consequently do their work much better than when three or four feet from the surface. On that account the making of a vine border does not entail the amount of excavating it used to some years ago: in fact, some of our best growers in the West and north of Scotland have slightly elevated borders to avoid the excessive moisture in wet seasons, and for thin skinned grapes like Madresfield Court, this system has a lot to commend it. However it is designed the first thing to set about is to get the place well drained, using ordinary drain tile and covering them up with a few inches of rough stones on broken brick. I prefer stones as if bricks are soft they go back to clay again or something not much better. When that is done, cover all up with sod grass side down to keep drainage clear. I would not recommend making any outside borders here as if roots did go out to them they would be out of control in winter and spring months, and my remarks here are for a border entirely inside. The best mixture for vines is well rotted sod three parts, the fourth part consisting of old lime rubbish, crushed bone and charcoal, and a border two feet or two feet three should do well if care is taken to stimulate it by mulching each year, which not only fertilizes but prevents too rapid evaporation of moistnre.

In planting young vines, I prefer washing soil away from roots so that they can be more readily spread out and planted shallow about four feet apart, cut back to within nine inches or a foot from ground, moisten the border and commence by shutting up the house and maintaining a temperature of from 55 to 60 during day, allowing it to recede to 45 at night, gradually raising the temperature as the day lenghtens. By starting them cool the young plants are not unduly excited and the roots have a chance to begin their work as soon as the buds begin to swell, if started in too quick a heat the stored sap or vitality becomes exhausted before roots have commenced and they receive a check. I would watch out for the strongest shoot; select it and get it fastened to a stake until such time as it reaches the trellis, then gradually get heat to sixty at night and as hot as you can during the day as the sun begins to have power. Watch out that air is put on in time so

that moisture be not allowed to condense on foliage, as the young soft leaves are so easily scalded and as the foliage is the lungs of the plant anything that impairs the leaf is detrimental. Keep a moist atmosphere by dampening floors and sprinkling the plants in the morning and again when shutting up in the afternoon. By this treatment the young vines will soon get to the top of the house; keep them securely fastened to underside of trellis, never above, as their weight will cut themselves while soft. The vine should always be suspended, never lying on the wires. I mention this as the rapid growth has to be watched daily. You cannot bend as you like to get them back when you want them, try and cultivate as good and strong laterals as you can without crowding, so that the foliage has room to develop and get a good leathery texture. About August begin to cool the house down by air, top and bottom, never allowing the border to become too dry and get the wood hardened and ripe and the pith wood firm, as now is the time you begin to look to having nice firm wood for the pruning knife. If they seem to be slow in ripening up, cut down half way and cut lateral back a bit to allow a large circulation of air and keep a little heat on pipes to facilitate. This is often the time when vermin, such as the red spider, get a foothold. A little soaked sulphur coated over the pipes will cure that and allow the foliage to finish its work of maturing buds. The first season's work is then practically over and further than picking up fallen leaves they should be allowed to remain until Christmas or January, when they should be pruned. This is determined by the vigor and strength of the plants, but three or four feet of the permanent cane is enough to leave and cut lateral back to one bud. Scrape all old mulching off; add a little fresh after pricking the surface with fork, always taking care not to break roots any more than you can help. Leave the house cool after pruning until wounds of pruning are healed up. Also use septic to dress wounds as soon as you cut, schellac or varnish will do, so long as the pores are closed up. I have seen a healthy vinery nearly finished by want of attending to this, as the young plants bleed so freely. I should say that here in Manitoba the house should be kept as cool as possible until the end of February or March so that the young plants may break more regular and strong. If they should be inclined to break weak near the base of rod it is advisable to bend the rod so that the direct flow of sap is checked until they get well started. I would allow, if necessary a small bunch on each rod, taking care that it is on a lateral, never on any account on the leader. The house should always be kept humid, and not too warm at nights to keep the growth firm. Stopping and tying the laterals are the chief duties and it is in this work that the novice needs to learn. I recommend keeping out all sub-laterals behind the bunch and when the main lateral is allowed to have two leaves in front of bunch the subs can be pinched always to one leaf in front each time to encourage a flow towards bunch. It is a great mistake to crowd vine foliage as it is weaker and becomes an easy prey to spider which are the natural pest of the grape vines. Thinning out the bunches to allow the berries to swell is work which practice alone can perfect as no two varieties are alike, but I have always noticed with rare exception

that the foliage is a good criterion to the size of the berry. And the great secret is to thin so that the berries can get their full size and yet allow the bunch to retain its natural dishes. Therefore, I would recommend thinning twice when one feels not very sure, never allowing the hands to touch the fruit as it is the ambition of every practical grape grower to have his bunch laid down on the plates or exhibit boards without a mark, and as the bloom is so delicate the least touch removes it. As soon as fruit begins to color I water the border and mulch to prevent evaporating and keep the house drier and at all times a chink of air to finish coloring. This is a season when people often allow their vines to run into laterals, which is a mistake; always keep them in moderate check until foliage begins to ripen, which can be facilitated by allowing air free and keeping a little heat in the pipes. The pipes can get a coat of soaked sulphur if pests begin to show.

Now, after pruning, in which you have to be guided by strength of rod as previous, allowing three or four feet so that it can form spurs and have no blind eyes, binding again if necessary to help to regulate. If the vines are in good form, splendid results should be expected, the finest bunch of Black Hamburg grapes I ever saw was from rods the second year's cropping. Never allow yourself to be greedy by overcropping. No gain is made by it and generally ends in disaster of some kind, either shrinking or not finishing up right. The season's work is same as previous years and by the time even the amateur has reached this stage he will be able to descern by his vines themselves if he is on good terms with them. There are a few varieties that no one who contemplates commencing should fail to have: Black Hamburg, a splendid early thin skinned grape — there are two separate varieties of this, the Mill Hill and the Ordinary. Buchlands Sweet Water; Foster's Seedling, early; Gros Colman, late; Moroc, late; Lady Downes, late; Alecantes, late; and the latest of all, Muscat of Alexandria.

Friday afternoon, February 17th, 1911.

GENERAL DISCUSSION ON FORESTRY TOPICS,

Conducted by Mr. Norman M. Ross.

Our subject, "Discussion on Forestry Topics", is a pretty broad one. I think, however, that the part of it in which we are most interested is that of tree planting on the farm. You will find there are many different points to bring up which we could discuss profitably. If there are any which you wish to bring up, do so. I have a few points here which might serve as topics for discussion.

The first one I have is "the best distance apart for planting trees." This is an old question, which has been threshed over pretty well here. We all have ideas as to what we think is the best distance for trees to be planted. Some of you do not look favorably on the plan suggested by the Forestry Branch that trees should be planted four feet apart each way. We think there are advantages in that and that the advantages outweigh all points that might be called disadvantages to that system. Others here might have different views and that is what we want to get. We will take that now for discussion, the best distance apart under our conditions, for planting. I will give you first my idea on the point.

We claim that close planting is advisable, first because it is economical as far as cultivation is concerned. You will find in nature that little trees will grow as thickly as they can stick together; they will thin themselves out naturally. We want conditions like those on our prairie plantations. If we plant the trees far apart it is long time before we get the desired shelter. If you plant your trees four feet apart with the ordinary varieties we use you can establish a good plantation in four years and after that no cultivation is needed. If you plant them six or eight feet apart you must cultivate those trees until they are grown close enough together to shelter the ground and perhaps one season through some unusual press of work you may not be able to cultivate the ground and then the work of all those years before is practically lost.

Mr. Ring:—I expect Mr. Ross has me spotted on account of a talk I gave here some years ago on tree culture. I do not think he quite understood me. I did say, if you are planting for fuel, to plant farther apart will give you better results. I say so still. What he has said is true, namely, that if you plant out for a wind-break, if you plant four feet apart each way, you can cultivate them much more easily and you will have a better wind-break and shelter break. I am not one of those fellows who believe in sudden conversions. I strictly followed out the instructions given by Mr. Ross, for the last seven years now, and while I do not just agree with him, yet I

followed out his instructions and his instructions were right. My contention, however, was all right, that if you are growing for wood, for fence posts or for fuel, or something like that, you will grow those trees to better advantage if they are say six or even eight feet apart. It is quite reasonable to suppose that I do not say it would require less cultivation. But if you are growing trees for the central purpose of a shelter belt then plant them four feet apart each way.

Mr. Hogg:—If you plant trees four feet apart you will never grow a specimen tree, but, even if you plant it merely for the purpose of a shelter, I cannot see how a tree is going to live long when it is so close to other trees as that. The plan they adopt in the old country is this: they plant the trees four feet apart and then thin out two of these trees as they grow, which would leave twelve feet apart. If there are trees that grow very large, what use would four feet apart be? You might grow a fence post, but nothing else.

Mr. Ross:—What you say is correct from your point of view, but we were speaking of trees for the farm for shelter purposes. Your system of cultivating for specimen trees will be absolutely different. What we want to try and encourage on the farm is the establishing of shelter belts; encourage the farmer to grow fuel and fence posts. We are not thinking of specimen trees. In regaard to what Mr. Ring said, certainly, if you cultivate and space your trees far apart, your individual tree will give you better growth and a better kind of wood, than when you plant them four feet apart. But, look at it from a commercial standpoint. My contention is that if you take an acre of land and plant your trees four feet apart; cultivate them for two or three years, then let your trees grow until large enough to use; and, on the other hand, take an acre of trees planted eight or ten feet apart; cultivate, as you must do, for five, six or eight years; then cut those two acres whenever you like, balance the cost of establishing at four feet apart and one at eight or ten feet apart, and find out how much wood you have.

Dr. Speechly:—I would ask critics not to confuse old country conditions with prairie conditions. Mr. Ross is familiar with both. The object in growing shelter belts is not ornamentation, but protection.

Mr. Middleton:—I might say that sixteen or seventeen years ago, at the side of our garden, we planted maple trees about six feet high, but twelve feet distant, and sowed maple seed between. We thinned those out to about a foot apart, and now you cannot tell which was planted and which sown. The trees are about twenty feet in height. We have shelter; they also retain the heat and stop the wind from blowing the soil away. We obtained our object, but they are not ornamental. It seems to me if you want a shelter, the best way is to sow the seed. A lot were broken down with the snow, but those grown from seed grew a good deal faster than those which were planted.

Mr. Middleton:—I should like to ask Mr. Ross what effect this thick planting has upon the constitution or age of the shelter. I have noticed that there are many thick shelter belts practically decaying in perhaps eighteen years.

Mr. Ross:—What variety of tree?

Mr. Middleton:—I am alluding to the maple, which is most generally used for a shelter belt. As far as thick planting is concerned, I would ask what effect it has on the longevity and constitution of the tree. There is another thing with regard to thick planting, that in heavy snows, when there comes a little thaw and the snow clings to the branches, I have noticed some plantations completely smashed under the weight of the frozen snow. But the point is, I would like to ask how long shelter belts would last?

Mr. Ross:—I rather differ with Mr. Middleton; I think it is the opposite. if you plant a tree far apart it will naturally grow branches; if you plant them together they will have a tendency to grow straight. Where damage is done by snow it is done in plantations where they are particularly branchy. As to the constitution or longevity of the tree in close plantations, it depends upon the variety, the soil and other conditions. There are certain varieties of trees, such as the cottonwood and ash, if they are crowded too much and should happen to be owershadowed by other trees which are perhaps a little faster growing, such trees will suffer and die. Mr. Kneehtel showed us the system of growing European forests. They plant them there very thick, but after a certain time they will thin them out. The idea of close planting is to reduce the initial cost of establishing the plantation. With a mixed plantation, after eight or ten years you would start to thin out some of your trees. I do not think it is wise to leave the trees at four feet apart for good, but when they are eight or ten years old thin them out, and you will find they will give you some return in the shape of wood.

Mr. Ring:—There is just one point I would like to say a word on, and that is with regard to the width of a shelter belt. Now, according to the plan Mr. Ross will give you, you will plant your trees four feet apart each way in the row. If you have more than eight rows you will find this, the snow blows through from the other side; the current of air is of course weakened as it blows through those trees and the snow will lodge after it gets a certain distance through the trees, and it will break down those trees on the side on which it lodges. This will happen if the belt is too wide.

Mr. Ross:—We have in past meetings discussed the advisability of planting wide belts. It is a difference of opinion. Both have their uses. I think a wide belt on a farm is what you want, because you can have your shelter and at the same time you can do something in the way of growing fuel. But if you have a wide belt you must make provision against the snow breaking down your trees. I do not think that the fact of the snow breaking down a wide belt should be used as an argument against a wide belt, because

it can be provided against. In all those cases on the experimental farms the whole place is more or less protected or surrounded on the outside with wide belts, and these single rows are used as secondary shelter belts. Now, I maintain that to advise a farmer on the open prairie to plant a single row, with the idea of getting shelter, is going to cause him some disappointment, because it will not give the same protection as wide belts. Single rows are useful and very advisable as secondary belts, and after a while as the main shelter outside gets to its better growth, these inside belts are cut out. That is my view. Both have their uses, and I do not think one could be condemned and the other recommended as the proper thing.

Mr. Tribe:—I have had considerable experience in the old country, but not very much in this. All that I know is from general observation. I think that the prairie home could be beautified to a very large extent by paying more attention to the single inside row. You see many of the prairie homes with nothing but the wide row. I think if a little more attention were paid to the varieties grown it would be better. Have an inside row for ornamentation. The idea of growing a few specimens in front of the shelter row would give a nice appearance. After all the social side of life is a very important item, and I think the ladies will take more interest in these meetings if we get a little beauty around the home.

Mr. Ring:—When I came to this country first, the first thing I did was to plant trees. I found out that there was a spruce forest about sixty miles north, on the Assiniboine River, and we hitched up and went north for spruce trees, and we have them now growing over thirty feet high, planted about thirty feet apart, and they meet together now. Of course, never attempt to trim a spruce tree; cultivate it as long as it will allow you to do so. After a little while it shelters the ground so that it puts it in the forest condition and you have little trouble with it. There is more in the variety rather than in the cultivation. Do not try to grow the black spruce; the white pruce is the tree to grow. A gentleman suggests to get the trees off the highland, but I say get them off the low land. One thing you have to do is never to let the roots dry out.

Mr. Barrett:—What is the difference between the black and white spruce?

Mr. Ring:—They are easy to distinguish. They are a darker color in the foliage.

Mr. Ross:—I have a point here, as to the best method of establishing evergreen belts. Now, lets get away from mixing up these two sides of the question. They are both important, but we must discuss them from one standpoint. I look at the thing for shelter purposes. We know that the evergreen is the ideal tree for this country, where we have leaves on the tree for five months of the year and for the rest of the time nothing. The ideal shelter we could obtain would be from such trees as the spruce. There has not been

much done in this country. But I see no reason, as soon as a stock of small plants can be worked up, why the farmer cannot have a shelter belt of evergreen trees, and it is worth while discussing the best method for establishing such a wind-break. My idea is this, it is not much use trying to establish the planting of ever-greens on anything more than a small scale, unless you can afford them a certain amount of shelter first by planting the ordinary hardy trees. If you plant such trees as the Scotch pine on the open prairie, without shelter, it may live, but the chances are ten to one that in the months of March and April, with the bright sun in the day time and the cold at night, unless they are protected a little by other shelter, if they do not die they will grow little during the succeeding season. I think we should plant an outside shelter belt of fair width of the broad leaved trees, and then if we can even get one row planted on the inside belt it will give us an ideal shelter. If any of you have had experience in planting such a belt, or have had any experience in planting and growing these evergreens successfully, I think it is worth while taking up the subject.

Mr. Henderson:—It has been said that spruce taken from the low land will grow better than those taken from the high land. I want to say that twenty six years ago, we got twenty six trees from the highland and only one died.

Mr. Ring:—I will tell you what I think about that. You may go on to the highland and get a little spruce there, but you have no idea how old that tree is; it may be very old, older than you are. If you should happen to get one of those old trees it will remain an old tree. Where you struck it was in fact that you happened to get a young tree. Of course, it looks the most natural thing in the world that if you take a tree off the highland and transplant it on the high land you should get better results.

Mr. Tribe:—Is it not a fact that the trees that you get have a straight tap root?

Mr. Ring:—If you get a tree of the highland it has a tap root, but if you get one off the low land it has not a tap root, and that is one of the reasons why they grow better.

Mr. Ross:—I think the whole question is in root development. If you take up a small spruce, such as you did on the highland, where the moisture is scarce, these roots are long and strangling, and in digging them up you will lose part of them. In the low land you have conditions that correspond more closely with nursery conditions. If you could get trees on the higher land with a good root system I would be in favor of using them. I think it is altogether a question of the development of the root system.

Mr. Ring:—Yes, but if you get a tree with a root system it is an old tree. If you get the trees out of the lower place, if they are small, they are young.

FOREST SCENES IN EUROPE.

Illustrated address by Abraham Knechtel, Inspector Forest Reserves.

Ladies and Gentlemen:—

In the cultivated forest of Europe the absence of underbrush and fallen, decaying logs and limbs, the density of the forest, and the even distribution of trees, often planted in long, straight rows, arrest immediately the attention of the Canadian visitor. One can stroll with comfort among the trees, or drive anywhere among them, where the hills are too steep or stony, or where trees stand too closely together, the latter being always the case in young woods. In these forests trees are not permitted to reach the full limit of their life as in Canada, and then, as the result af decay, to fall and remain rotting on the ground. They are left in the woods only as long as they continue to grow rapidly. When the growth declines, wether on account of insect attack, disease or old age, they are removed. The forester takes the trunks for lumber and the limbs for firewood; the peasant gathers up the brush and digs out the stumps, these being in many cases his only fuel.

Everywhere in the woods of Southern Europe may be seen people gathering brush and taking it home in carts, drawn frequently by cows or dogs. Often, however, it is tied in a bundle and carried, sometimes a long distance, strapped on the back or poised on the head. Permission to gather brushwood for fuel is usually given free of charge. In some places a nominal sum is charged; in others the workmen in the woods are granted the privilege, as an extra compensation for their labor. Sometimes with this permission goes also the privilege of gathering leaves and nuts, the leaves being to feed the goats, or used as bedding for horses and cattle. The nuts are mostly used as food for domestic animals; but many of the poor people dry the acorns and use them in place of coffee. In the cities of Italy pine cones are peddled on the streets, the seeds being used as a dainty. In some districts, however, all the products of the forest are put upon the market. In a forest belonging to the City of Grabow, in Mechlinburg, I saw a layer of leaves and moss that was sold for $16.00 per acre.

With such keen demand for the small products, the forests of Europe can be managed much differently than those in Canada. On this continent there is no market for the brush or rotting timber. Dr. Schenek, who has charge of the Biltmore estates in North Carolina, endeavored to force the brush upon the market. Whenever he sent a load of wood to the village he threw on some brush to give it to the people free of charge, but they told him they did not want it, as it littered up the door yard. And so, since in this country the limbs, tops, brushwood and rotting trees are without market value, they are not taken out of the woods, and so our woods are a veritable fire trap.

Methods of tree culture in Europe.

Pine and spruce trees are mostly started in nurseries. The soil is prepared and beds are made in about the same way as in a vegetable garden. The seed is sown either broadcast or in rows across the bed. In a week or ten days the trees get through the soil, each capped with a shell of the seed from which it grew. Soon the cap falls off and the tender leaves spread out to the warm sunshine and the rain and begin their mission of making wood. For two years the little trees are left in the seed beds, and are then transplanted into other beds in the nursery, in which they are spaced five or six inches apart. They remain in these beds for one or two years more. They are then about a foot or fifteen inches tall, and are taken to a field, from which the forest has been removed, and are there set in the ground spaced about four feet apart. They are planted close together so that in a short time they will crowd each other. This crowded condition compels the trees to grow tall and slender, and to shed their lower branches, thereby permitting a growth of timber free from knots. It also hinders evaporation by shading the soil, which is a matter of prime importance.

In about twenty years a thinning is necessary, as the trees then crowd each other so much that many are suppressed, in more or less degree, by their stronger neighbours, and these latter are also hindered materially in their growth. In spruce wood forests sometimes more then half the trees are removed in the first thinning. These are sold for firewood, poles and various other purposes. As the crowns of the trees soon close again, subsequent thinnings are necessary about every ten or fifteen years, the better sticks being taken for building purposes, while the rest go mostly for pulp wood if spruce for firewood if pine.

The final cutting is not often made before the trees reach the age of eighty years. Sometimes they remain until they are one hundred and twenty years old, especially where the soil is poor or the climate severe. These remaining trees are the finest in the forest, the diseased, deformed or injured ones having been removed in the successive thinnings. Then about one hundred and sixty to two hundred straight, cylindrical trees, twelve to fifteen inches in diameter, and about eighty feet high, with shafts free of branches, offering in all about forty thousand to fifty thousand feet of lumber, and selling on the stump for from five hundred to six hundred dollars. These are felled and taken from the woods in almost full tree lenght. It is common in Europe to see logs sixty feet long being hauled from the forest.

In the Black Forest the fir is the tree most commonly grown. It is on account of this tree that the forest has its name. The foliage is a very dark green, and is very dense, causing the tree to cast a heavy shade; and a weird darkness exists in the woods, even at midday. This forest is not planted

but is grown from seed that falls from mother trees left standing properly distributed over the ground to be restocked. A beech woods is reproduced in the same way.

Forest fires in Europe.

Since dead timber is not left in the forest, there is but little loss from fires. The fires are started mostly by careless smokers and workmen, locomotives do slight damage, causing, perhaps not more than 10 per cent of the fires. In Wurtemberg, from 1887 to 1897, there was a total of one hundred and twenty fires, only eight being caused by sparks from locomotives, and among these only one causing considerable damage ($3,570). Along the railroads, however, precautionary measures receive considerable attention. In many places along the forested side of the track there is a ditch, about eight feet wide, which is kept free from all vegetable growth. Frequently a strip of forest, about a rod wide, running parallel with the railroad, is specially prepared in the following manner: A path along the edge of the woods is spaded about four feet wide. In the forest about a rod from this, and running parallel with it, a second path is made. Crosspaths joining these two are made made at intervals of a rod. These paths are at all times kept free of vegetation and the ground in the strip is raked free of leaves and twigs. Sometimes a double strip is made, two rods wide, with three paths parallel with the railroad, and cross-paths as in the single strip. The white birch is commonly grown on these protection strips, but a general opinion prevails that the spruce gives equally good protection with less trouble from the fallen leaves. Occasionally, along a pine forest, can be seen a protecting strip of birch without the spaded paths. Locomotives are provided with spark arresters. The right-of-way is sixty-six feet wide and kept clean. The forest is intersected more or less with fire lanes, each two or three rods wide. These are kept free from all inflamable material. In a coniferous forest the trees stand close together, facilitating, in a dry time, the progress of a top fire. These fire lanes make a break in the continuity of the crown-cover and give an opportunity to check the flames. The small loss from fire is due, in a large measure, to the fact that villages are numerous in the forests, and hence fire fighters are easily obtainable. The European forests are not much troubled with trespassers. The woods are, as a usual thing, well patrolled and the property limits are plainly marked. Where watercourses, rocks or other natural boundaries are wanting, the lines are marked by artificial signs such as heaps of earth, stones or iron stakes. This leaves no chance for the Canadian excuse of ignorance concerning the line.

Injuries and diseases.

To describe all the injuries inflicted upon the woodlands by domestic and game animals, rodents, insects and fungi would occupy more time than can be given to this lecture. Besides, one hears, in Europe, general complaints concerning only the deer, snow-press or snow-break, a few insects and a few

fungi. The deer are numerous and injure the trees by biting off the buds and young shoots, often killing young plants, and crippling and stunting older ones. They also injure saplings or poles by barking them in rubbing off upon them the velvet from their antlers in the early summer. They also tread down the seedling growth, and devour acorns and beechnuts. The young trees are sometimes protected by smearing the tops with a mixture of beef blood and manure, the deer refusing to eat them. Reducing the number of the deer by shooting them seems, however, to be the only general remedy.

Ownership and location of European forests.

The forest may belong to a state, a city or other community, a charitable institution, a corporation, or a private individual. The forests occupy land that is unfit for agriculture, mountains where the climate is severe, hills where the ground is rocky, plains where the soil is sterile. In some of them the wood supply is only a secondary consideration, the forest being kept principally as a game preserve, a tourist resort, or because it exercises certain protective functions. In the Spessart there is a forest devoted largely to raising wild boar. Boar hunting is a favorite sport of the emperor, the kings and dukes and princes. Formerly the spear was the weapon used. Dogs brought the boar to bay and then the hunter attacked him with the spear, and often the encounter was thrilling in the extreme, for the boar is a great fighter. Now however, the hunters prefer to take the easy advantage behind a rifle. Some forests have splendid drives with species of trees planted for their aesthetic effect.

History of forestry.

The art of forestry may be said to have had its origin among the Germanic tribes, about 1,000 years ago, although Plato, 400 years before the coming of Christ, deplored the destruction of the forests of Greece. The first comprehensive code of forest laws is attributed to Canute, a famous king of England, Denmark and Norway, who reigned from 1014 till 1035. These laws defined the forest as a hunting-ground for the king. The trees were considered as only a shelter and covert for the game. Later, under Norman rule, the laws were much modified and became very objectionable to the people. It is said that their severity was one of the causes which brought about the passing of the Magna Charta, with which was associated the Charta Forest. Until quite recent times the forest was considered as only a hunting ground. The following statement appears in Manwood's "Forest Laws", published in 1598: "A forest is a certain territory of woody ground and fruitful pastures, privileged for the wild beasts and fowls of forest, chase and warren, to rest and abide in, in the safe protection of the king for his princely delight and pleasure". Blackstone's definition of a forest reads thus: "Forests are waste ground belonging to the king replenished with all manner of chase and scenery, which are under the king's

protection for the sake of his recreation and delight''. The artificial reforesting of waste lands was begun by the city of Nurnberg, Bavaria, in 1368, by the planting of pine, a practice soon imitated by many communities in Southwestern Germany.

Revenues.

The business side of forestry is always kept very prominently in view in Europe. The forest must be made to yield a profit on the investment, especially if it is cultivated for its wood supply. It rarely fails in this respect. In 1898 the forests of Saxony, which covered at that time 434,896 acres, yielded a net profit of $2,241,611.57. The net profit per acre was $5.15. The dividend on the investment was about three per cent. A net revenue of three per cent may be considered a low rate of interest, but one should bear in mind that the country must have wood; that the forest occupies non-agricultural land, that the investment is continuous, and that the risk is not great. Relative to this question is also the fact that in Germany the country is considered under moral obligations to furnish employment to its citizens. Where the market conditions are very favorable, the net revenue may be considerably greater than that indicated by the figures given. The canton of Zurich, in Switzerland, gives a net receipt per annum of $7.28 per acre. About half of this comes from the sale of brush and small wood from thinnings.

Forestry prospects in Canada.

Canada will be compelled to encourage forestry. It will be a long time, however, before the results will be as satisfactory as they are in Europe. The factors upon which the growth of trees depend are about the same here as there; other conditions, however, are widely different. There the forests are comparatively small, broken, densely populated, and the roads are fine. Our forests are very large, compact, without population, and without roads. There wages are very low, and the market for wood is high; there wages are high, and the market for wood is low. There the limbs, tops and brushwood are all utilized; here they are practically without market value. There the woods are clean and free from danger of fire; here the woods are a veritable fire trap. Not only are the tops and limbs left in the forest here, but they are thrown into heaps, as if the woods were made ready to be burned. There, since the woods are clean, the conditions for the spread of insects and fungi are reduced; here the abundance of rotting wood in the forest offers to the insects good breeding places, and to the fungi favorable conditions for their growth. In Canada there are also certain notions of government which will hinder the achievements of results, such as have crowned the efforts of European foresters. In Europe it is held that the forests are all national property; not state forests alone, but all forests. Hence many private forests are brought under government management. It is considered

that each generation has a right to the forest products, but the forest itself must be left to the succeeding generation in as good condition as it was found. In France no clearing is permitted in private forests without the sanction of the government authorities. In Wurtemberg, Germany, clearing on private property is under state control. In Russia, a law provides for the control and management of the forests of individuals where the public welfare seems to demand it, and the cutting down of such forest is prohibited when it might endanger the best interests of the whole country. In this country private forestry cannot well be practiced, because of the high taxes which gradually increase as the forest grows in value. If a forest is planted on denuded land, at the end of thirty years, about the time when the first thinning will be made, the taxes, with accumulated interest, will have amounted to more than the sale value of the timber. In France and Switzerland re-forested land is released from taxes for thirty years. In Italy instead of this, the Forest Department contributes to associations and private owners three-fifths of the total expense of the work of reforestation upon the conditions that the plans for the work, prepared by the department, be followed and the work be done in a specified time.

Mr. Golden moved a vote of thanks to the lecturer, which was seconded by Mr. J. J. Ring.

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